

Radio Control 47380

OFF-ROAD SOUTHERN ROCK—PAGE 88

# CAR ACTION

THE WORLD'S LEADING R/C CAR MAGAZINE

August 1994

Join the  
**OFF-ROAD  
RAGE** for  
under  
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**Get  
Dirty**  
pg 48

**HOW TO GEAR  
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## TESTED IN THIS ISSUE

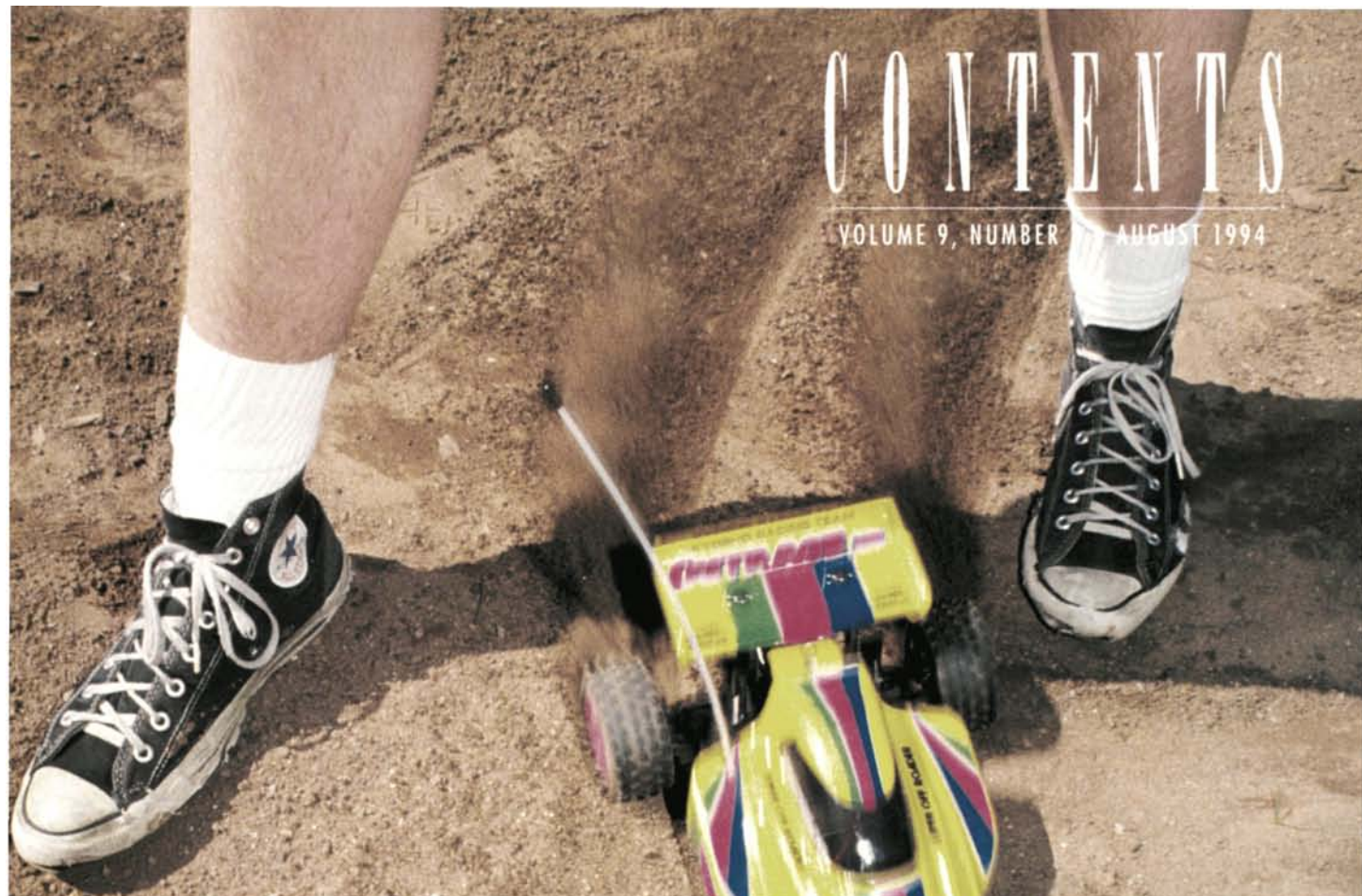
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- Yokomo's Toyota Supra
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# EDITORIAL

## Christmas Wish List Winner Announced

**W**hen we began our "Christmas Wish List" contest back in the December '93 issue, we never dreamed we'd get this kind of response! Readers were asked to submit ideas for their "dream" articles—anything they'd like to see published in *Car Action*—and in

return, we would reward the winner with any one of the 12 items shown in the Wish List. Letters flooded in by the thousands, and we were faced with the difficult task of choosing one winner.

After two months of deliberation, the entire *Car Action* staff is pleased to announce the winner of our Wish List contest (drum roll, please): Joe W. Peterson III of Rialto, CA. In his letter, Joe wrote that he'd like to see an article that covered the entire history of R/C cars—from their humble beginnings to today's high-tech racing machinery. As promised, staff members are busily researching material with which to make Joe's idea a reality—and a feature in an upcoming issue.

We're indebted to all of you who responded with article ideas. It's really a shame that we could choose only one! But, rest assured, every letter was read, and your ideas will help us to steer this magazine in the right direction—where you want us to go. By the way, Joe, your Team Losi Double-X car is on its way! Congratulations.

### Don't miss our Entry-Level Guide!

This month's issue contains our first-ever Entry-Level Off-Road Guide. We had a lot of fun putting this one together. We built and tested five of the hottest, low-buck dirt burners in existence, and we came away pretty darn impressed. Without a doubt, you get much more for your dollar with today's products than when I first got into the hobby. The cars are super-durable, packed with high-zoot features and perform well, and the best thing is that they won't put a monumental dent in your checkbook.

### We want to hear from you!

Have a question or comment? Write to us at 251 Danbury Rd., Wilton, CT 06897, or e-mail us on the Internet (Frank Masi: frankm@airage.com; Chris Chianelli: chrisc@airage.com; Karen Jeffcoat: karenj@airage.com; John Howell: johnh@airage.com).

*Frank Masi*

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# TRINITY<sup>®</sup> Evolution 10

## MAGIC TRICKS

by Joel "Magic" Johnson<sup>®</sup>  
IFMAR World Champion

The exciting news this month is the Jim Dieter-designed "Trinity Dragworks" line of drag-racing cars. These two new kits—a Pro Stock and a Funny Car—will have the same impact on drag racing as the EV10 had on oval and road racing. It's time to say good-bye to the "pod bolted to a slab of graphite" chassis that you have become used to and to enter the high-tech, high-speed world of Dragworks. These are the most sophisticated cars available, designed with the premise that a chassis should have the ability to be dialed in for every run regardless of track surface, horsepower and weather conditions. This is really important for all of you guys who lack a proper track and do your racing in the street.

Until now, tuning hasn't been possible with the "pod bolted to a slab of graphite" chassis. There was nothing to adjust: all you could do was punch the throttle and pray. Dragworks has changed all that. With our new designs, you will have tuning options never before realized. More perfect runs will be made, and more horsepower can be hooked up. Running a Dragworks car, like running an EV10, makes it too easy to win.

Some of the unique features:

- Super-light weight.
- Graphite chassis and pod plates.
- Lightweight machined-aluminum motor mounts.
- Lightweight clamp-on wheel hubs to keep axles from splitting.
- Aluminum screws for less weight.
- T-bar construction for more traction and easily adjustable tweak.
- Aluminum-beam front axle with adjustable caster.
- Breakaway front body mounts save chassis plates.
- Pull-bar setup to adjust traction by controlling torque transfer from motor to chassis.
- All aluminum parts, pod plates, screws, etc. are anodized purple.
- Lightweight CKW tires come with kit.
- Detailed instructions with tuning tips.
- Can be made rear-engined with after-market conversion plate.

DW0001 Dragworks Pro Stock Car Kit \$249.

DW0002 Dragworks Funny Car Kit \$279.

Joel "Magic" Johnson,  
Trinity R&D

# LETTERS

**WRITE TO US!** We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," *Radio Control Car Action*, 251 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

**FYI**—All you truck pullers out there, this update's for you. If you need to get in touch with the NRCTPA, contact Don Hubert at 2321 Greenwood Court, Champaign, IL 61821; (217) 359-7628.

## TRUCKIN'

In the December '93 issue, there's an article on a suspension overhaul for the Clod Buster; it's called Clod-A-Leaver. How can I get more information on where to buy one?

JORGE DELGADO  
Escondido, CA

Well, Jorge, when I built my Project Big Truck (*R/C Car Action* July '94), I researched the cantilever suspension kits on the market, and I found two companies that build stylin' systems: ESP Mfg. (I used one of their chassis on my truck) and Bennett Equipment, who build the Clod-A-Leaver chassis. You can get hold of ESP at 20 Crystal Lake Plaza, Crystal Lake, IL 60014; (815) 455-5440; Bennett Equipment is at 900 E. 1300 S., Romney, IN 47981; (317) 538-2725. Good luck with your decision. JH

## MUDMAN

I'm a new subscriber to your magazine, and I like it. I have a few questions: I'm thinking about getting an electric Kyosho USA-1, and I want it to be able to go through mud and water without it going crazy. What can I do to waterproof it?

I own a Tamiya Super Blackfoot, and I want to hop it up by getting after-market things such as an aluminum chassis, transmission and shocks, but I can't find anything to fit it. Can you help me? In your February '94 issue, I saw the new ESP Super Blackfoot aluminum chassis. Do

you know if it will ever be on the market? If so, when? Thanks for your help, and keep up the good work.

GUNNAR NELSON  
Washington, D.C.

*Hmmmn...Gunnar Nelson...now, where have I heard that name before? Anyway, to answer your first question: your best bet is to seal your receiver in a plastic bag or a balloon, then seal the end of the bag or balloon with silicone. Just to be on the safe side, you can run a bead of silicone around the case of your servo where the halves join.*

*Do the same with your ESC: run a bead of the goop around the base of the wires where they exit the speed controller and then around the seam in the case. Try to mount it in your chassis where it's least likely to get splashed. But don't put it in a balloon or a bag; it would probably get too hot and could possibly fry itself. You might want to build some sort of mud shield out of scrap Lexan pieces and put it around your ESC. It might not totally prevent water and mud from getting to your ESC, but if you must play in the mud, it's worth a shot. If you do make your own custom mud flap, make sure that your ESC will still receive some cooling air.*

*While you have the silicone out, run a bead of it around your transmission case—on the seams where the halves join and all the way around the motor. If it's totally sealed, you won't have to worry about mud getting into your gearboxes and "grenading" your tranny.*

*Make sure all your bearings (or metal bushings) are properly oiled so they don't get toasted right away. Oh, and one more thing: spray your truck (when it's clean) with a thin coat of WD-40 before you go out to run in the mud. When it's time to clean it—which I hope you'll do right away—you should find that the dirt comes off a little more easily. That's about all I*



can think of right now. If anyone out there has some good mud-swampin' tips, drop us a line here at Car Action.

As for your other question, the only hop-up item I know of that was designed specifically for the Super Blackfoot is a Thorp diff kit. There might be a few other items that I'm not aware of.

As it stands right now, ESP has no concrete plans to make the chassis that we showed you in the "New for '94" article a few issues back. You can give ESP president Eric Sutcliffe a call at (815) 455-5440 and see whether he has any made-up chassis that he could possibly part with.

The only suitable mods I can think of are an electronic speed controller, maybe some ball bearings and, possibly, new racing-type tires and wheels. Top it off with a trick-looking stadium-type truck body, and if you wanna go all out, you can add a set of racing-style aluminum shocks. They're readily available, and a ton of companies make shocks. How about a hot stock or a mellow mod motor? Anyway, check it out and good luck! JH

### IS THE EG FOR ME?

I recently bought a Traxxas Nitro Hawk. Can you tell me whether a KO Propo EG Starter System would fit in my truck? Thank you; keep up the great mag!

BRYCE AUTEN  
Milford, MI

Sorry, Bryce; the KO Propo Remote Starter system does not work with the Nitro Hawk's Image .12 engine. If you have an O.S. CZ-R engine in your Nitro Hawk, it will work, but you might have to move your fuel tank a bit farther forward. The KO Propo Remote Starter system is available for the Tamiya FS-15, the Prafa .12, the Leo .12, the Dynamite TNT .12 and the O.S. CZ-R and .10 engines. It's definitely a cool system. I've worked with it, and I think it's awesome. Oh, well, maybe KO Propo will release one for the Nitro Hawk sometime soon. JH

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Buy One Body for \$12.99 Each  
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- #127 1/10 T-Bird Stocker Wide
- #166 1/10 T-Bird Stocker Narrow
- #141 1/10 Olds Stocker Wide
- #162 1/10 Olds Stocker Narrow

- #168 1/10 Short Track Stocker Narrow
- #144 1/10 Short Track Stocker Wide

- #153 1/10 Iron Man Toyota Desert Racer
- #165 1/10 Dakota "T"
- #145 1/10 '48 Ford Panel Truck

- #146 1/10 Nissan GTP-NPT 90
- #127 1/10 Penske Indy
- #132 1/10 Nissan 300Z

- #129 1/10 Street Rod Coupe
- #134 1/10 '70 Barracuda
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- #160 1/10 Corvette ZR-1
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**#A-7201(G) RIBBED Front Tire**  
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## WHAT'S NEW

### TEAM ASSOCIATED

#### RC10GT Fuel Tank and Tubing

Associated designed this constant-pressure, quick-fill fuel tank with filter specially for the RC10GT.



**Part nos.**—7720 (tank), 7724 (tubing, 15 inches), 7725 (tubing, 4 feet); **prices**—\$12.50, \$2, \$4.

**Associated Electronics**, 3585 Cadillac Ave., Costa Mesa, CA 92626; (714) 850-9342; fax (714) 850-1744.

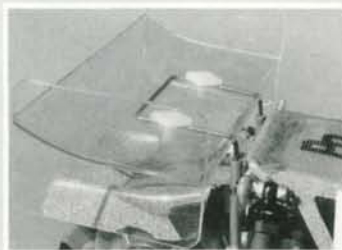
### KIMBROUGH PRODUCTS

#### 1/10-Scale Plastic Wing

Designed to provide maximum downforce without increasing drag, these aerodynamic, 1/10-scale, molded-plastic wings for off-road and NASCAR oval racers are available alone and as a kit with small KP wing ties and 12 inches of 0.078-inch music wire.

**Part nos.**—wing: 127 (clear), 127B (black), 127W (dyeable white), 127P (hot pink); wing kit: 128 (clear), 128B (black), 128W (dyeable white), 128P (hot pink); **prices**—\$4 (wing), \$6 (wing kit).

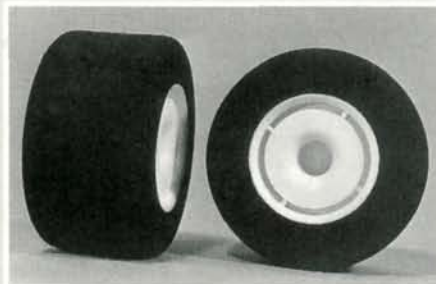
**Kimbrough Products**, 1420 E. St. Andrews Place, Unit F, Santa Ana, CA 92705; (714) 557-4530.



### PRO-LINE

#### LX-T Stadium-Truck Tire

Made of Jaco's exclusive medium compound, these stadium-truck foam tires are available in low-profile and high-wall versions, and they're a direct fit for the LX-T.



**Part nos.**—2010 LP (RC10T and LX-T fronts), 2011 LP (RC10T rears), 2014 LP (LX-T); **price**—\$20.95.

**Pro-Line**, 201 W. Lincoln St., Banning, CA 92220; (909) 849-9781; fax (909) 849-2968.





### TRINITY Evolution 10LSD

LSD means left-side drive—a bias to the left that gets you into and out of turns faster. Could that be why the Evolution 10LSD dominated the '93 PROCAR World Championships? And the motor is as far to the left as Trinity could move it; this keeps the rear tires firmly planted as the Evolution 10LSD leaves the turns. For stock-class fiends, there's a reverse-rotation Slot motor; and the batteries are farther forward, more to the left and set into slots to lower the center of gravity. With a Reactive Caster™ front-suspension system and Triad Monoball™ rear suspension, you're really rolling.

**Part no.**—EV0013; **price**—\$399.99.

**Trinity Products Inc.**, 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705; fax (908) 862-6875.

### RUSTY'S RACING PRODUCTS



### Aerodynamic Wheel Disks

Designed with the principles of aerodynamics in mind, these flexible vinyl wheel disks look great and help to reduce drag. Attach them to any wheel/tire combination simply by heating and sealing them with a heat gun. They're available in

29 colors—from black to chrome to hot fluorescents—to fit wheels for trucks and 1/10- and 1/12-scale cars.

**Part nos.**—701 to 729; **prices**—\$1.99/set of 4.

**Rusty's Racing Products**, 10550 Noland Rd., Overland Park, KS 66215; (913) 888-4042.

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## TEAM LOSI TIRES:



## THEY BITE!



#A-7636(G) Truck "STEP PIN" Rear

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# INSIDE SCOOP

by CHRIS CHIANELLI

IN SEARCH OF FUN AND GLORY, 'CAUSE LIFE'S TOO SHORT TO BE A SHEEP!

## MEAN STREETS

**N**ow you can turn any car—on-road or off-road—into an asphalt assault machine with Road Hawgs from Pro-Line. Road Hawgs are long-wearing tires with an aggressive tread pattern designed specifically for dirty, unprepared asphalt and concrete surfaces. Contact your local hobby dealer for information.



## the machine to beat

**W**hat you're looking at is the newest off-road racer from Team Associated to bear the RC10 name—the Worlds car! This version of the super-popular Team Car incorporates all the factory-driver refinements that not only helped Associated to win its fourth off-road world championship, but also helped it to dominate the '94 Florida Winter Championships (taking the top seven spots) and win the 2WD class of the '94 Reedy Race of Champions.

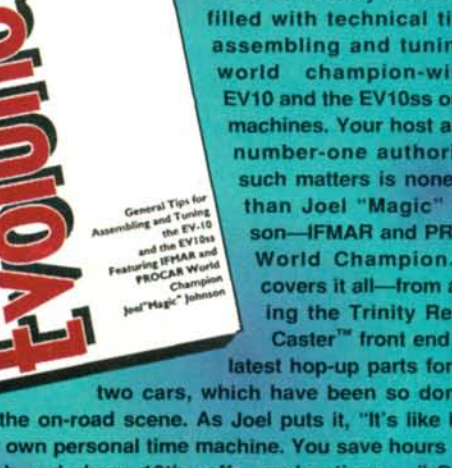
According to Associated's Cliff Lett, the newest RC10 is designed to make the most of today's stickier

tires and more powerful motors. Its features include a hard-anodized, pre-milled chassis tub; graphite shock towers; stronger, composite suspension arms; new, solid steering bellcranks with bushings (bearings are optional); a new rear bulkhead with improved geometry; and fluorescent yellow three-piece front rims and one-piece rear rims. A full set of Pro-Line XTR tires with foam inserts is included, as is a new Turbo Mirage body from RCPS.



**TRINITY.**  
**Evolution**  
10  
Information Magic™ with Joel Maglic®  
Series #1 Volume #1

General Tips for  
Assembling and Tuning  
the EV-10  
and the EV10s  
Featuring IFMAR and  
PROCAR World  
Champion  
Ike "Magic" Johnson



# Evolution

General Tips for  
Assembling and Tuning  
the EV-10  
and the EV10ss  
Featuring IFMAR and  
PROCAR World  
Champion  
Joel "Magic" Johnson

This new Evolution 10 video from Trinity Products is filled with technical tips on assembling and tuning the world champion-winning EV10 and the EV10ss on-road machines. Your host and the number-one authority on such matters is none other than Joel "Magic" Johnson—IFMAR and PROCAR World Champion. Joel covers it all—from adjusting the Trinity Reactive Caster™ front end to the latest hop-up parts for these two cars, which have been so dominant on the on-road scene. As Joel puts it, "It's like having your own personal time machine. You save hours on the bench and shave 10ths off your lap times...." Contact Trinity Products Inc., 1901 E. Linden Ave. # 8, Linden, NJ 07036; (908) 862-1705.

Is it powerful? In the words of company owner Bob Davis, "It can eat a glow .15 engine for lunch. Diesels have more power where it counts. You can go deeper into the turns using the added compression to slow you down and charge out of the turns with the greater torque offered by diesel." A *Car Action* review is now being arranged to investigate these claims. This much, however, is certain: it's for the serious car buff who's not afraid to try something different. For more information, contact Davis Model Products, P.O. Box 141, Milford, CT 06460: (203) 877-1670.



# Diesel and Dust

**Winning is What Separates Champions  
From Everyone Else.  
And We've Won It All.**



team

# team PUSHED

- ☐ **IFMAR 1/10th, On-Road Modified World Championship** - Joel Johnson
- ☐ **ROAR 1/10th, On-Road, Modified National Championship** - Joel Johnson
- ☐ **ROAR 1/12th, On-Road, Modified National Championship** - Joel Johnson
- ☐ **4-Cell Modified Winter Nationals Modified Championship** - Mike Blackstock
- ☐ **U.S. Oval Masters Modified Championship** - Mike Blackstock
- ☐ **ROAR 1/10th Speedway Modified National Champion** - Ernie Bucc

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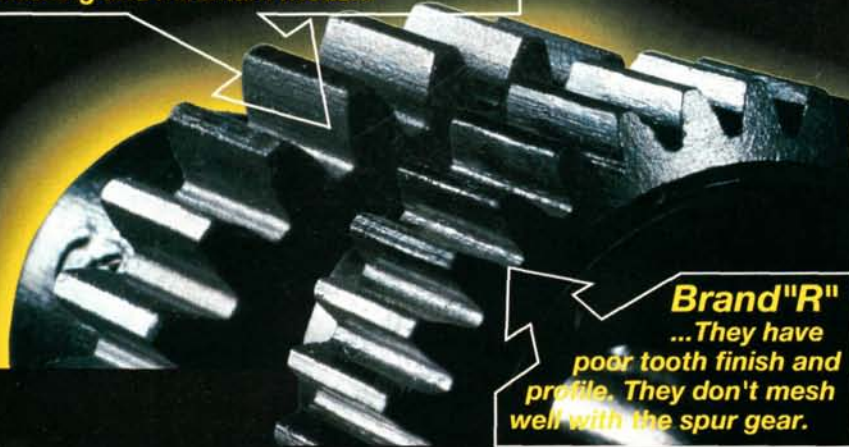
# On-Board Electric Starting

The new 1/8-scale Mercedes and BMW (Bavarian Motor Werks, in case you didn't know) from Robbe have assembled chassis with .21 pull-start engines installed. These 2WD machines can be upgraded to 4WD and can also be ordered, or upgraded, with onboard electric starting. You won't have to remove the body to start the electric-start version. The external starter wand (pictured above right with the chassis) lights the glow plug and cranks the motor simultaneously. What could be simpler? Both pull-start and electric-start versions feature an aluminum chassis; fully independent double-wishbone suspension; large-volume, oil-filled, coil-over aluminum shocks; a disk brake; an air filter; a muffler; and much more. For more information and prices, contact Robbe Model Sport, 180 Township Line Rd, Belle Mead, NJ 08502; (908) 359-2115.



## Zero Gravity Pinions

**Trinity Pinions...**Ours are precision machined from 6061 T-6 aircraft aluminum and teflon impregnated for smooth meshing and minimum friction.



**Brand "R"**  
...They have poor tooth finish and profile. They don't mesh well with the spur gear.

**Trinity Zero Gravity™ Pinions Are Super Light!**

**Brand "R" Pinions Are All So Over-Weight, Power is Reduced!**



**From Magic Motor Sports**

**\$5.99**

In 48 pitch from 12 to 30 teeth • In 64 pitch from 15 to 50 teeth

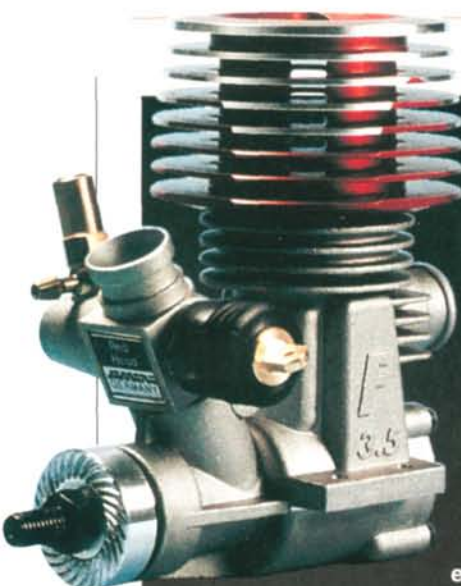


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# Jamara Motors

**T**here's that name again! And here are their latest offerings. The Jamara Red Head F1 and Black Head F1 engines are .21 (3.5cc) rear-exhaust engines with all the

expected race features, including true ABC piston/sleeve technology, twin ball bearings, six-port induction and a twin-needle, slide-valve carburetor. The interesting thing about these engines is their multinational background. The crankcases are cast in Russia, the internal parts are machined and installed in Italy, and the engines are sold through the German company Jamara—a combination that, I'm told, gives the buyer a very competitive engine at a very competitive price.

An rpm peak of 38,000 is claimed! For more information, call (800) 685-8290, or write to Alpha USA, 55 Leveroni Ct., Novato, CA 94949.



## A CLOSER LOOK

**L**ast month, I told you about the Tamiya/OPS alliance and the new .15 engine that they would collectively market. For those who were disappointed that there was no closeup of the new motor, here it is. You see, the "Scoop" will never let you down.

Considering the reputation of these two companies, it really should come as no surprise that the finest of features appear to be present on this pull-start engine. These include true ABC (aluminum piston with chrome-plated brass sleeve) technology, a machined connecting rod with bronze bushings (top and bottom), a twin-needle carburetor and Schnuerle-type, multi-port induction. I'm confident that the finest metallurgy is used throughout. We'll keep you informed.

## Another Open Offer

**A**s of late, Dahm's Racing Bodies has gotten into the open-wheel body business with their new F1 bodies featured here last month. Now here's their new Type C Indy-style body that's also a perfect replacement body for the Tamiya and Kyosho F1/Indy chassis. The Type C features Penske-type styling, fine detailing, trimming guidelines for Tamiya's Lotus 107B Ford chassis, a driver, a racing wing and Dahm's decal sheet. You can finish your Type C body to look like your favorite Indy car using Autographics, Tamiya, or Kyosho decals. This car is shown with Autographics Valvoline Indy decals. Contact Dahm's Racing Bodies, P.O. Box 360, Cotati, CA 94931; (707) 792-1316; fax (707) 792-0137.





# READERS' RIDES

*"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 251 Danbury Rd., Wilton, CT 06897. If the Ayatollah of Radio Controlla chooses your photo, you'll receive a 6-month subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the fourth annual "Reader's Ride of the Year Contest" in the fall of 1994. Write your address and phone number on your letter and on the back of each photo you send, in case we need to contact you.*



## YO, JOHAN

Johan Kraan's RC10T has been extensively modified. Johan, who hails from the Netherlands, equipped his truck with an RPM Worlds chassis, an MIP gearbox, a Reedy motor, a Novak 410 MXc speed controller, a KO Propo 1001 servo, Pro-Line and Schumacher tires, Sanyo SCRC cells and a Dahm's Commando XL body that he painted himself. He controls his truck with an Airtronics XL2P radio system.

• • • • •



## KOALA-X

Derek Maller of Sydney, Australia, sent us this photo of his Team Losi Double-X. Derek's car is equipped with a Tekin 410K ESC, a Trinity Championship Series 12-turn modified motor, a KO Propo 1001 servo and Trinity 1700 SCRC cells, and it's controlled by a KO Propo EX-5 radio. Derek races at the Sydney R/C Off-Road Car Club, where he holds the '93 2WD Modified Championship title. He adds that he wishes that R/C was as inexpensive and popular in Australia as it is in the U.S. Well, Derek, let's trade; you can live here, and we'll live at your house for a while. Deal?

• • • • •



## FEAR THIS!

Jim Johnson of Holiday, FL, sent us this photo of his RC10T. Jim's truck is decked out with a Dura-Trax 7-cell battery pack, HPI five-spoke chrome wheels and a Futaba MC210CB speed controller. It's controlled by a Futaba Magnum Sport radio system. According to Jim, the real work went into painting the body, which he did himself using only spray cans.



• • • • •

## FLYIN' EAGLE

D.J. Clark of Deming, NM, passed along this photo of his Traxxas Blue Eagle LS-II. D.J.'s truck has been modified with Pro-Line rear tires, Super-Con connectors, a Litespeed heat sink that's attached to a DuraTrax 17-turn triple, a Novak 410 M-5 ESC, PTI batteries and an A&L Slam-it Lower body. The air-brushed paint job was done by D.J. and his best friend. D.J.'s plans for future mods include a Novak receiver and an A&L Power Clutch.



# READERS' RIDES



## DX DONE RIGHT

This stunning photo comes from Stefan Stiegler of Ancaster, Ontario, Canada. His father, a professional photographer, took this shot of Stefan's Inferno DX. The car is equipped with a GS .21 engine, a Futaba S9301 steering servo and a S148 throttle servo. A Futaba Magnum Junior radio controls it. Stefan says that the ground around him is covered with a ton of snow, so he hasn't had a chance to run the car yet. We have a feeling that by the time he reads this, the car will be *slightly* dirtier than it is here.



## HOMEUILT HALF-TRACK

If we could show you all the cool photos that came from Parzival Seeto, they would blow you away. Parzival who lives in Fremont, CA, has quite a collection of cars, including the first Tamiya R/C car, a 1/12-scale Porsche 934 Turbo RSR and an unusual, nitro-powered, 1/4-scale motorcycle. This photo is of an all-wheel drive, unique-looking Paddy Wagon half-track—a homebuilt project Parzival made using four separate model kits: a Tamiya front-wheel-drive chassis kit, their 4WD chassis kit and a power shovel/dozer kit. A 1/24-scale Paddy Wagon model from Monogram tops it off, and a Tamiya Tamtech radio system controls the model. It's pretty sharp-looking, Parzival; keep up the good work! ■



## TAZMANIA

Romeo Collado of Honolulu, HI, wants to thank his wife for this one. According to Romeo, "She's been very supportive of our hobbies and, at times, will help me in the creative department. Here's her Warner Bros. Tasmanian Devil." Underneath the Protoform Nissan body lies the new Associated 10L with the new Dynamic independent-suspension front end. The car is equipped with the latest electronic gear from Novak and an Airtronics Caliber 3P radio.

## TUNDRA RUNNER

Crossing the land of ice and snow moguls is Roman Balzar's RC10ST. Roman, who lives in Stamford, CT, equipped his truck with a 410 M5 Novak ESC, a Trinity Green Machine stock motor and HPI wheels. Other mods include MIP CVDs, Pro-Line 8090 rear tires and Associated Team shocks.





# TROUBLESHOOTING

by JOHN HUBER

Illustrations by Steve Collins

If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at Radio Control Car Action, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, Radio Control Car Action, 251 Danbury Road, Wilton, CT 06897. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

## Radio Rebellion

I'm having trouble with my Rival RV2P Sport radio; the reception is awful. The radio's reception was fine when I bought it, but it has recently started to glitch. My reception is about 4 to 5 feet

screaming down the street out of control again!

**Drew Cornell, San Marino, CA**

Drew, the cause of your reception problem is probably fuel contamination of the receiver. Try to disassemble the receiver case, and allow it to dry completely. If the problem persists, I recommend that you send the radio and receiver to Airtronics for service.

When you run a gas car or truck, it's always a good idea to seal the receiver in a protective bag or balloon to prevent fuel from penetrating it. Seal the end of the bag or balloon with silicone sealant, then wrap its end with a tie-wrap. Also, try mounting the receiver on a piece of foam rubber to cushion it from the engine's vibration.

As a final word of advice, don't take any chances when you run a gas car; they can travel at speeds of more than 30mph and can cause serious damage to people and property if they're out of control.

now, and sometimes, when I get out of my limited range, the servo clicks into full throttle. I own a Traxxas Nitro Hawk, and when it reaches full throttle without any control, it has some disastrous crashes. Can you guys help me out? I don't want my car

## Feeling the Heat

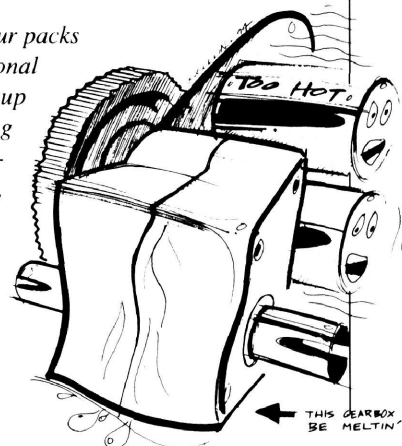
I have an MRC Thunder King, a 610-HRV Novak speed controller, dual 540 motors hooked up in series and twin DuraTrax 1500mAh packs. The motors caused the transmission case halves to get so hot that they fused together! The case also became extremely brittle. I can't find a heat sink to fit it. I have three capacitors on each motor. Can you please help me?

**Ryan Christie, Port Washington, NY**

If your motors get that hot, something is definitely wrong! You might have a mechanical problem that's making your motors work too hard. Remove the motors and make sure that the tranny spins freely. If that's OK, then examine the wiring. I'm pretty sure that the problem stems from the use of two battery packs. If they're wired in series, you're running the equivalent of a 12-cell pack! Your 610-RV is

designed to be used with a maximum of 10 cells. Though I'm not sure whether the additional voltage is causing your particular problem, it's important that you don't exceed the manufacturer's voltage rating when using an ESC.

If you're running your packs in parallel, the additional run time that this setup affords may be causing your motors to over-heat. Traditionally, motors are geared to match the discharge time of a single pack. If you let the motors run too long, they might be overheating.





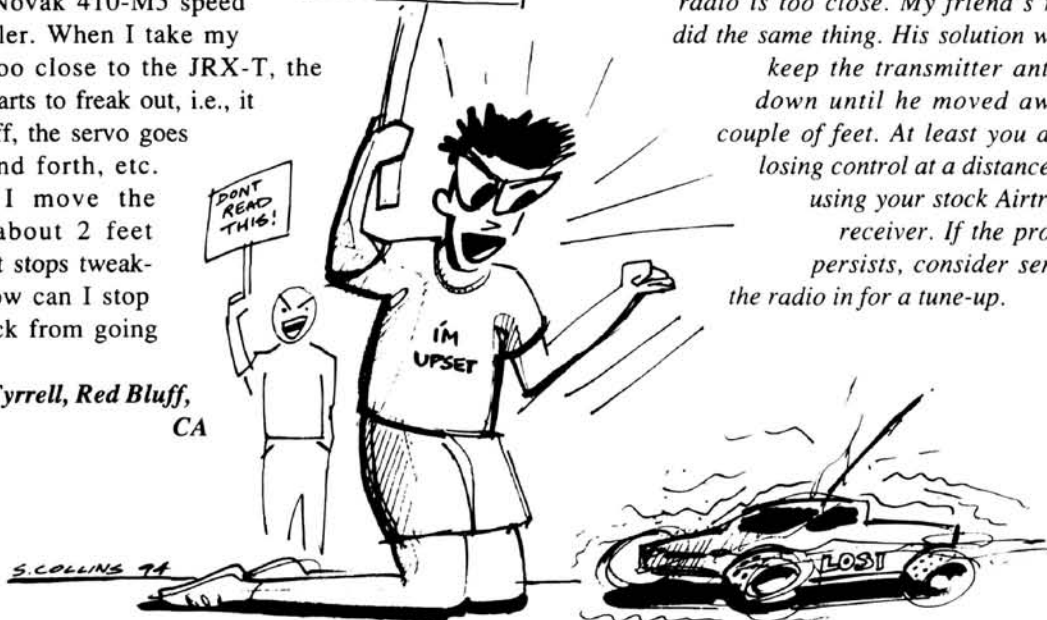
# Too Close for Comfort

I have a Losi JRX-T with an Airtronics XL2P radio, a Dynamite Micro-Pro receiver and a Novak 410-M5 speed controller. When I take my radio too close to the JRX-T, the truck starts to freak out, i.e., it takes off, the servo goes back and forth, etc. When I move the radio about 2 feet away, it stops tweaking. How can I stop my truck from going crazy?

**Kevin Tyrrell, Red Bluff, CA**

**STOP  
YOUR  
GLITCHIN'**

*I'm not exactly sure why this happens, Kevin, but I've seen it before. I think the signal is so strong that it overpowers the receiver when the radio is too close. My friend's radio did the same thing. His solution was to keep the transmitter antenna down until he moved away a couple of feet. At least you aren't losing control at a distance! Try using your stock Airtronics receiver. If the problem persists, consider sending the radio in for a tune-up.*



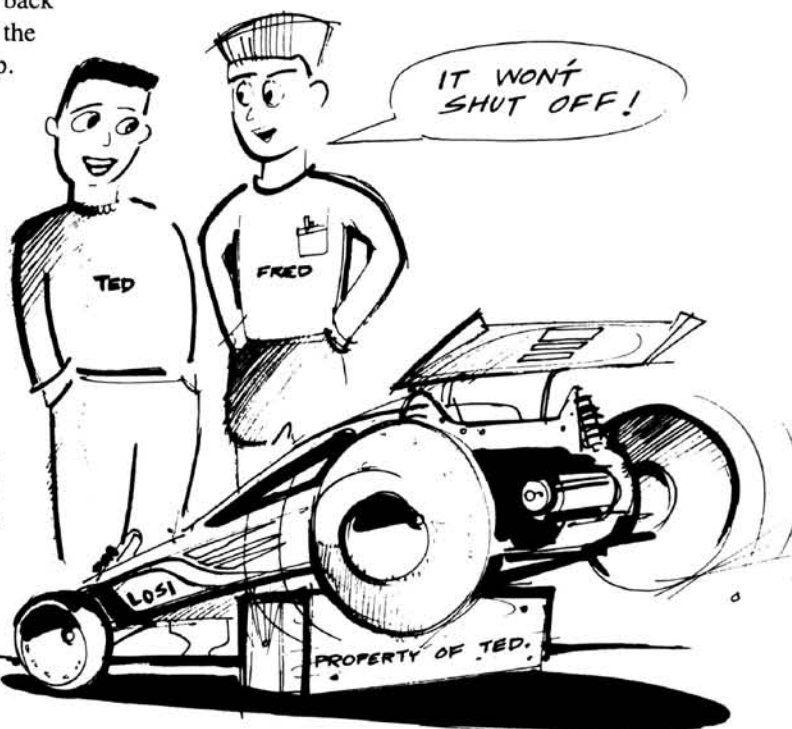
## Uncontrollable Controller

I've got a JRX-2 with a Novak 410-M5 speed controller, a Novak NER-75 receiver and a Trinity motor. I run a 6-cell Sanyo battery pack. Whenever I hook up my battery pack, the back wheels run wide open. Even if I shut off the speed controller, the wheels don't stop. Please help.

**Bret Meyer, Beatrice, NE**

*There are a couple of things that you should check out, Bret. If this is a new speed controller that you're hooking up for the first time, you'll have to adjust it to the transmitter. First, disconnect the motor and hook up the pack. If the servo works and the light on the speed controller blinks when you move the trigger, you just need to adjust the throttle neutral either on the speed controller or the transmitter. Also, check the condition of the receiver crystal; make sure that it isn't missing or damaged. If the servo doesn't work and the light doesn't*

*respond to the radio, you may have a damaged speed controller. Send it back to the manufacturer with a note describing the problem.*

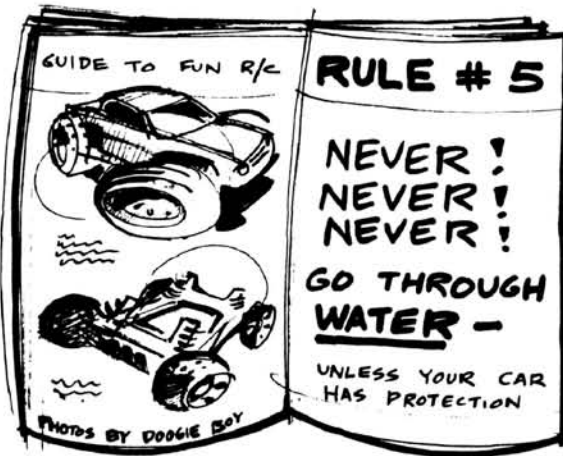




## Puddle Trouble

**O**ne morning, I drove my RC10 down the street, and it went through a tiny puddle. The water just barely hit the bottom of the chassis, but it might have hit the electronics or the motor. I drove it around for a little longer, and it seemed fine.

That afternoon, I took my car outside to drive it again, but it barely moved, and it made a loud buzzing sound. I took it back inside and checked it out. It looked perfectly fine.



Can you tell me what's wrong? Thank you!

*Todd Van Cleave,  
La Grange, IL*

*Because you hit a puddle, you might have damaged the motor. Remove it, thoroughly clean it with motor spray, and lube the bearings. Also inspect the brushes and the commutator for wear. You should try a spare motor to make sure the problem isn't in the other electronics.*

## "Back-Marker Ron"

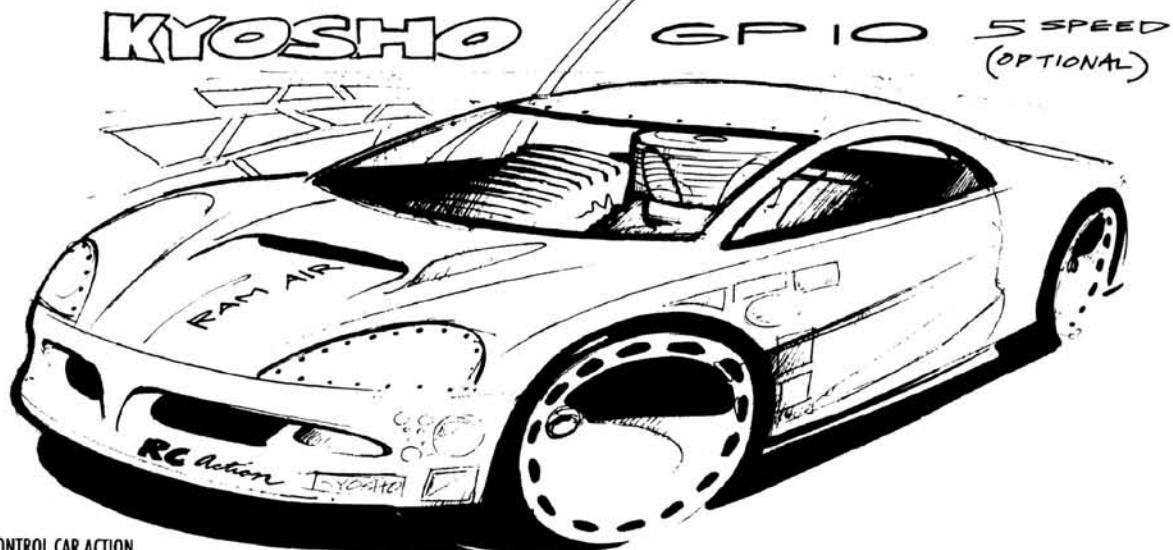
**I**'ve been in the R/C hobby for the past eight years, and some of my friends convinced me to switch to gas racing. I bought a Kyosho Nitro Thunderbird with an O.S. .12. CZ-R engine. I broke in the engine with a half liter of fuel, and then I decided to modify it. I installed an O.S. tall heat-sink head, a full set of ball bearings, a DuraTrax two-stage air filter, a Kyosho 75cc fuel tank and a Super Works Series exhaust manifold and tuned-pipe system. I ran the car and had a ton of fun with my friends, but now I think the car is lacking in speed.

I saw a Kyosho GP-10 2-speed tranny that has a flywheel, a clutch bell and a 2-speed mechanism. Do you think it will fit and operate properly in my nitro car? A local hobby shop said to try an Americana chassis with a 10L Dynamic strut front suspension to lighten the car and make it run faster, but I like the stock chassis. Some said to try fuel with a higher percentage of nitro; I'm currently using 20-percent nitro. What do you suggest? I need an answer.

My friends have started calling me "Back-Marker Ron," and that's embarrassing—especially on a parking lot where everyone is watching! Please help!

*Ronald V. Villafior, Manila, Philippines*

*If you need more speed, try gearing the car up with a larger clutch bell. Try one or two teeth larger at first, and more if you're still not satisfied. You should also pick up an improved set of clutch shoes for the car. The stock shoes wear out quickly and should be replaced. I had a Kyosho car with the same clutch, and I was amazed at the improvement the new clutch shoes made. Get the black ones; they're much better.*









Tamiya

Newman

Haas


by JOHN HUBER



PHOTOS BY JOHN HUBER



## Mansell's missile



**I** REMEMBER WHEN Tamiya\* came out with the Road Wizard a few years ago. It was your basic, electric, on-road, open-wheel racecar, but it was a lot of fun, and it looked great. Well, things have changed. Tamiya's latest version of its F103 chassis is based on the Newman-Haas Lola that was driven by Nigel Mansell when he won the 1993 Indycar Championship. It's very high-tech and looks oh so realistic!



## DESIGN

The F103 chassis is vastly different from the previous 101 and 102 chassis. The front end has rigid plastic arms with a floating steering block, and a tiny coil spring has been mounted at the bottom of the kingpin to handle the bumps. The

rear end's T-plate design is similar to that found on American cars, such as the Associated 10L. The difference is that the T-plate and the main chassis are separated by O-rings instead of pivot balls. The O-rings allow the rear end to float and pivot. A small shock is used to support the weight, but it does nothing for damping. To control damping in all directions, three disks and two fiberglass plates are sandwiched together. By using shock oils of different weights, you can



**Eat your heart out, Nigel!**

vary the amount of damping. Top this off with a light chassis and a high-quality ball diff, and you have a very nice package!

## CONSTRUCTION

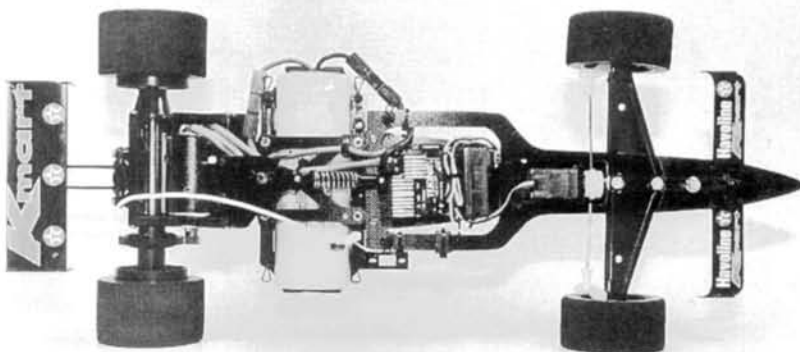
Despite its sophistication, I was amazed at how easily the car went together. I built the chassis in about an hour and mounted the electronics in 20 minutes. The body took a little longer.

If you've never used double-sided tape to mount foam tires on rims, you'll be amazed at how easy it is. You can also use the rims again if the tires wear out.

Ball bearings are included to support the rear axle, and bushings are used in the diff and the front wheels. The diff is so smooth with the bushings that I can't imagine what it would be like with bearings.

To install the steering servo, you'll have to break off both servo ears. Although this will make it difficult to mount the steering servo on another car, it's worth it for permanent installation.

# Tamiya Newman-Haas Lola



Scale ..... 1/10  
Price ..... \$245

## DIMENSIONS

Overall length ..... 19 in.  
Wheelbase ..... 11 in.  
Front width ..... 7.75 in.  
Rear width ..... 7.75 in.

## WEIGHT

Gross (ready to run) ..... 2 lb., 8.5 oz.

## CHASSIS

Type ..... Double-deck pan chassis  
Material ..... Fiberglass

## DRIVE TRAIN

Type ..... Gear  
Primary ..... Pinion/spur  
Transmission ..... None  
Differential(s) ..... Ball diff  
Slipper clutch ..... None  
Bearings/bushings ..... Metal bushings and ball bearings

## SUSPENSION

F/R: Type ..... Front floating kingpin, rear T-plate w/coil spring  
Damping ..... Rear friction plates

## WHEELS

Front: Type ..... One-piece plastic  
Dimensions (DxW) ..... 1.75x1.2  
Rear: Type ..... Two-piece plastic  
Dimensions (DxW) ..... 1.75x1.75

## TIRES

Front ..... Foam  
Rear ..... Foam

## ELECTRICS

Motor ..... Stock 540 motor  
Battery ..... 6-cell, 1400mAh battery pack\*  
Speed controller ..... Tekin 411G2\*

## OPTIONS TESTED

Futaba PCM radio and S132h servo, Tekin 411G2 ESC

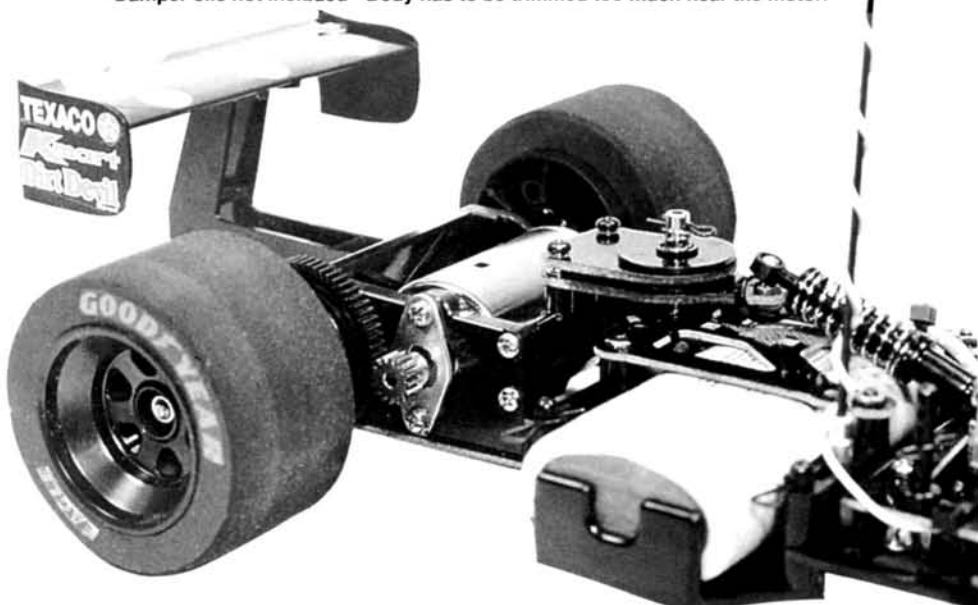
\* not Included

## Hits

• Very fast • Very sleek and realistic looking • Handles very well and is adjustable.

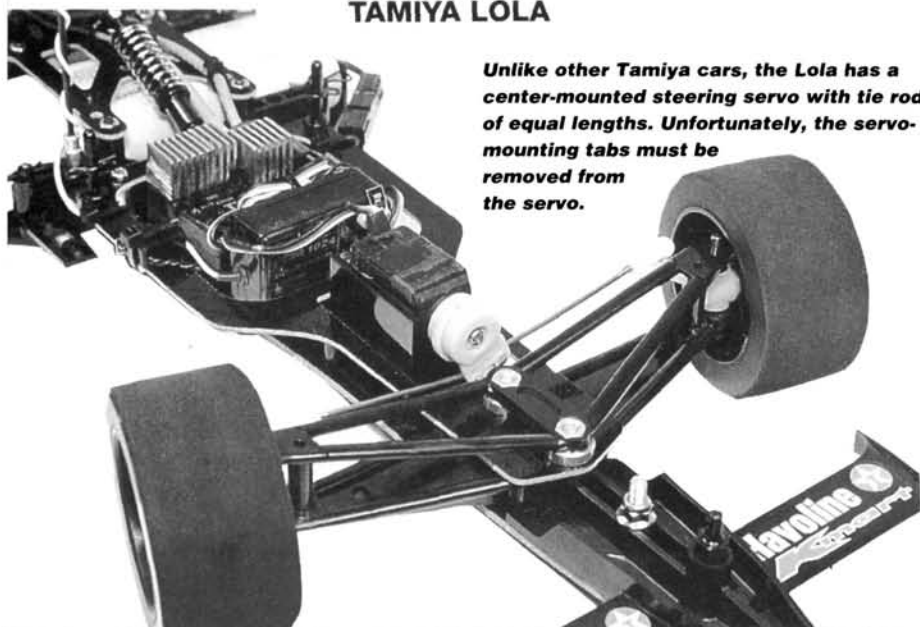
## Misses

• Damper oils not included • Body has to be trimmed too much near the motor.





## TAMIYA LOLA



**Unlike other Tamiya cars, the Lola has a center-mounted steering servo with tie rods of equal lengths. Unfortunately, the servo-mounting tabs must be removed from the servo.**

Like all Tamiya kits, if you take the time to detail the body, you'll be amazed at how realistic the car looks. There are only two colors to paint on, but do it carefully. A black decal stripe placed between the two colors is a nice touch. A separate driver's head, a roll bar and winglets add to the detail. The front and rear wings are one-piece plastic and molded in color; they're very small and sleek compared to Formula 1 car wings.

### PERFORMANCE

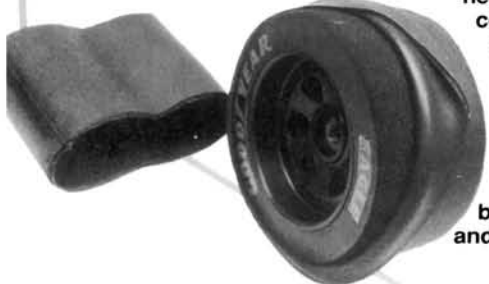
With a peaked 6-cell pack, I headed to the street. I was startled by the speed of the car. I know I've said this before, but I really was! The chassis' light weight and the direct drive really made use of all the available power. The Tekin\* 411G2 was a

# LOLA HOP-UPS

**Although the Tamiya Lola is a great car right out of the box, several interesting hop-ups are worth checking out. These parts (and their part numbers) are listed in the back of the kit's instruction book.**

**T**he first thing I wanted to check out was the RD Tire Cap material. It's basically a tube of rubber that can be stretched over your foam tires to increase traction. One package is enough to cap either two rear tires or three front tires, so, for a set of four tires, you'll need two packs. To mount the rubber on the wheels, simply cut the tube to the desired length, and stretch it over the tire. Then, peel it halfway back to expose the foam underneath. Apply a good-quality contact cement, fold the rubber back over the tire, and repeat the process for the other half of the tire. How much better is the traction? Well, I stuck the tire to my refrigerator, and it held there! When the rubber wears out, just peel it off and replace it.

## RD Tire Cap Material

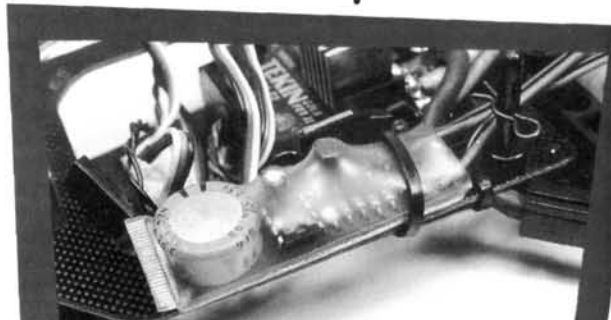


## "Acto-Power Formula Motor"

**T**amiya makes a motor specially for the F1 cars—the "Acto-Power Formula Motor." Even though the car was very fast using the stock motor, I thought the modified motor would be a lot of fun. Boy, was I right! The motor made the car run so fast that I could hardly open it up all the way. The motor looks like a standard modified motor with a removable endbell and brushes. The can is designed to dissipate heat while running. It also has cooling vents and heat-sink brush screws to keep it cool. As with most modified motors, the timing is adjustable to suit your power needs. I ran it with 0 degrees of timing, and it was as fast as I could handle.



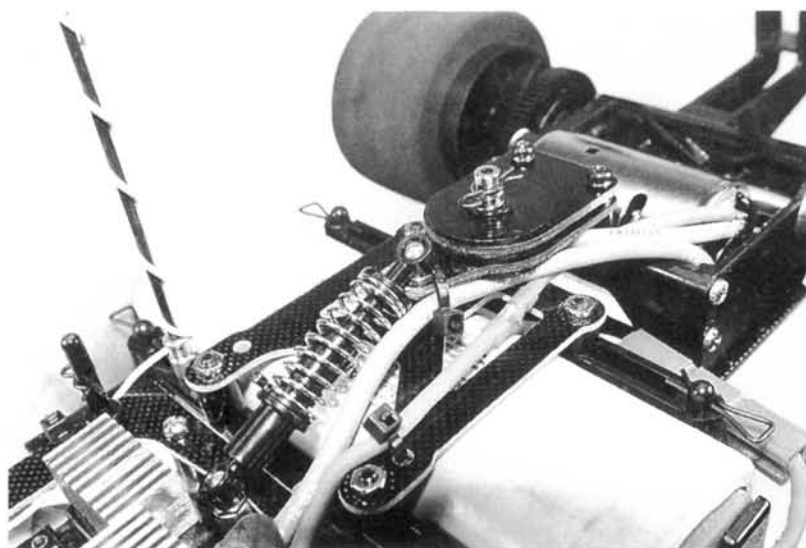
## F1 Brake-Lamp Unit



**Another cool hop-up is the F1 Brake-Lamp Unit.** You connect it to your motor, and it lights an extremely bright LED at the rear of the chassis. The light comes on when the car is in neutral, or when braking, and it's very cool-looking on the track. Tamiya also makes brake units for its other cars, and these units can be adapted to fit just about any R/C car.



**If you've ever wanted to get your shot at Indy as Mansell did, but you don't have a spare million or two, try the Tamiya Newman-Haas Lola. And if they won't let you run it at Indy, go to Whippoorwill.**

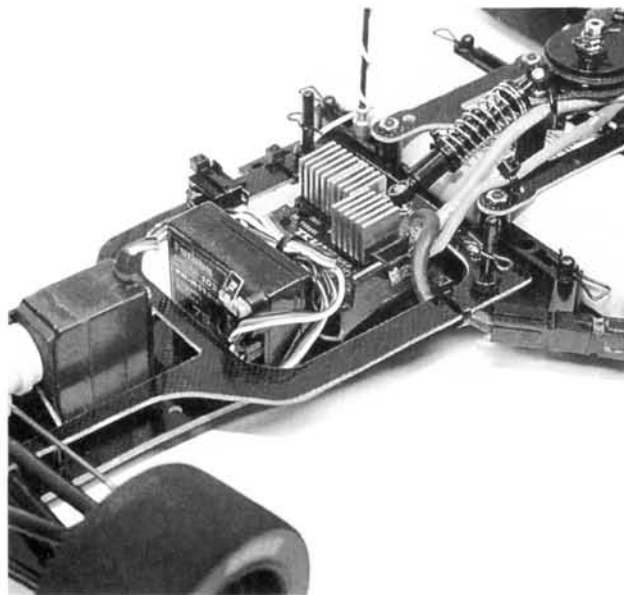


**The rear suspension consists of a flexible T-plate, three damper disks and a coil spring. By using damper oils of different weights, you can adjust the car to a specific track.**

bit of overkill with a stock motor, but I was planning to add more power. I used Sermos\* connectors and separated them so that they wouldn't interfere with the body. It's so tight inside that there's no room

Futaba\* servo was great.

I decided to see what the performance would be like with a modified, so I dropped in a Tamiya Acto-Power Formula motor. I figured it would be just right for the car.



**The Tamiya Lola's radio gear is arranged in the center of the chassis. This allows the body to be reproduced without thick side pods.**

for a plug on top of the battery pack.

I charged another pack and went to a large parking lot to really let it rip. As the car sped past, you could see wisps of dust swirling around the rear tires and the wing. The Tekin made stopping look easy, and the steering response with the 132H

Wow! The car was so fast that I didn't even max it out. I took photos of the car on a go-cart track that had a straight-away about 100 feet long, but there wasn't enough room to slow the car down. I guess the speed was close to 40mph. Maybe I should gear it down a little...nah...it just needs a bigger track!

If you've ever wanted to get

your shot at Indy as Mansell did, but you don't have a spare million or two, try the Tamiya Newman-Haas Lola. And if they won't let you run it at Indy, go to Whippoorwill.

\*Addresses are listed alphabetically in the Index of Manufacturers on page 153. ■

# The Newman-Haas Team



**I**f you've watched any Indy racing in the last decade, you've heard of the Newman-Haas racing team. Led by Mario and Michael Andretti, this team has dominated racing in the '90s. It was started back in 1983 by Carl Haas, the North American importer for Lola cars, and Paul Newman, Academy-Award-winning actor and four-time SCCA national champion.

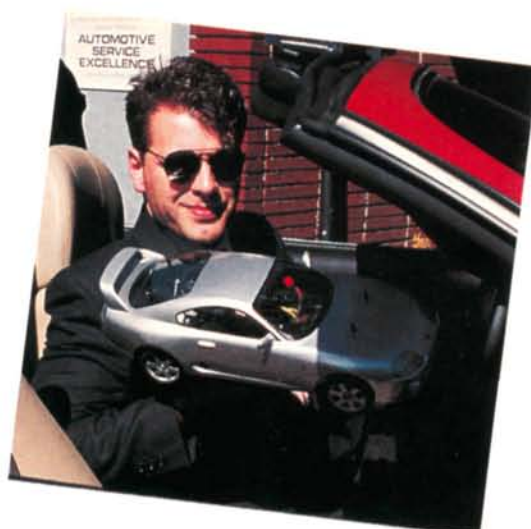
When Michael headed for Formula 1 in 1993, the team needed another great driver to pair up with Mario. With enthusiastic support from their sponsors, Newman-Haas snagged world champion Nigel Mansell into Indycar racing. Good thing they did; he won another PPG cup for them in 1993! The Newman-Haas team now has two of the three drivers who have won both Formula and Indycar titles.

**Nigel Mansell is one heck of a driver!** In his 18 years of auto racing, he has had some very impressive wins. His F1 victories total 30, putting him in third place behind Alain Prost's 51 and the late Ayrton Senna's 41. In 1993, he gave Indy cars a try and did just as well. In the 82-year history of Indycar racing, he became the first driver to win both the pole and the race in his first start: Australia 1993. He also became the first true rookie to win the PPG Indy Car World Series championship with five victories. And for one week (September 19 to 26, 1993), he held both the Indycar and Formula 1 titles simultaneously.





Thanks to Toyota of  
Westport for the use of  
the full-size Supra for  
the photos...too bad we  
couldn't trade cars!



Stylin' sedan from Japan

YOKOMO

Toyota

Supra

by JOHN HOWELL



## YOKOMO SUPRA YR-4

**SCALE** ..... 1/10

**LIST PRICE** ..... \$269 (w/out body)  
\$310 (w/body)

### DIMENSIONS

Overall length ..... 14 in.  
Wheelbase ..... 10.25 in.  
Front width ..... 7.13 in.  
Rear width ..... 7.13 in.

### WEIGHT

Gross (ready to run) ... 3 lb., 3 oz.

### CHASSIS

Type ..... Plate  
Material ..... Black fiberglass

### DRIVE TRAIN

Primary ..... Spur/pinion

**OPTIONS TESTED:** KO Propo 1001 FET servo, Tekin 411G-2 ESC modified with Trinity 12-gauge wire, Yokomo Pro Stock 12 motor, Yokomo Peak Power 1700 SCR 6-cell pack, Futaba PCM 1024 radio with FP-R113iP receiver, Deans Ultra Plug battery connectors and a 20-tooth Robinson Racing Titanium Gold pinion gear.

### HITS

• High quality parts • A lot of fun to drive • The ultimate in scale realism

### MISSES

• Bumper scrapes ground—should be heated and bent slightly upward  
• Replacement bodies are expensive

Transmission ..... Belt drive  
Differential(s) ..... Ball diffs  
Slipper clutch ..... None  
Bearings/bushings ..... Bearings

### SUSPENSION

Front/rear ..... Lower A-arms  
with upper control links  
Damping ..... Oil-filled coil-over  
shocks

**WHEELS** (f/r) ..... Six-spoke,  
ABS plastic  
Dimensions (DxW) ..... 1.875x1 in.

### TIRES

(front/rear) ..... Foam

### ELECTRICS

Motor, battery, ESC not included

**Y**OU GENTLY pull open the door and slide into the spaceship-type cabin of the all-new Toyota Supra. A turn of the key fires up the potent 320hp twin-turbo straight-six engine. A grin spreads across your face as you savor the sound of the engine whine as you tach it near the 6,000rpm mark. You effortlessly slide the manual six-speed into first gear and then viciously tromp on the gas pedal. At first, you think you're digging two channels in the pavement with your rear tires, then the car hooks up and you launch explosively down the street with the road ahead quickly coming to an end before you.

It only takes 5 seconds flat to get to 60mph and only 120 feet to stop from that speed. It's a pure sports car in every

has a higher power-to-weight ratio at a whole heck of a lot less than 45 grand.

Interested? Read on.

one of the most detailed, scale-looking bodies I've ever seen grace an R/C car. Actually, Yokomo produces a number of stunning, very realistic bodies, such as a Honda Prelude Si, a Mitsubishi 3000 VR-4, a Subaru Impreza (the USA's version is the SVX) and the BMW 325i or 318i body. You can buy the YR-4 without a body and supply your own, or you can buy a kit that comes with any one of the bodies mentioned.

I received the kit directly from the Yokomo factory in Tokyo, and when I opened the box, I found that the English instructions hadn't yet been prepared. After looking over the Japanese instructions though, I thought that it wouldn't be too hard to figure everything out. A couple of days later, I found my



sense of the word—an adrenaline rush in a most impressive package! But that package also costs somewhere in the vicinity of 45 thousand big ones—Yikes! Well, what if I tell you that you can get a scaled-down version of this brutal beast—one that looks identical to it and

### YOKOMO TO THE RESCUE

Based on the YR-4 chassis, the Yokomo\* Supra is a 4WD rocket that features a black fiberglass chassis and upper stiffener, a belt-driven 4WD system, two ball diffs, 4W independent suspension and sharp-looking wheels—all topped off with

assumptions were correct: the car is relatively easy to build. Anyway, I won't bore you with the details of the kit's construction; instead, I'll tell you what you get for your hard-earned cash.

## In the Beginning...

In 1965, Mr. Tom Yokobori started Yokomo at his home in Tokyo. During the initial stages of its growth, the company was called Yokobori Mokei (Mokei is Japanese for model, or model and hobby products). As time went by and the company grew, the name was shortened to Yokomo (YOKOBORI MOKEI). The company, which started with only Mr. Yokobori, now has a staff of 30, one of them being the talented, several times world champion Masami Hirotsuka.



## TOYOTA SUPRA

### RACE-PROVEN 4WD

The car uses a belt-drive 4WD system similar to the one in Yokomo's highly successful Works' '93 Super Dogfighter off-road buggy. The only difference between the two systems is that the YR-4's front belt is slightly shorter; the Works' '93 Super Dogfighter has a longer chassis. This 4WD system helped Masami Hirotsuka win the '93 IFMAR 4WD Championship, and it has made a graceful transition to on-road. At least you know you're getting a reliable, proven, winning system.

As well as the belt-drive system, the YR-4 has the same silky-smooth diffs as those used in the off-road car. An 81-tooth spur gear is mated with a steel shaft that rides on ball bearings in the car's rear motor plate/rear diff housing. One of the two belts in the 4WD system rests on the back of the spur gear on a built-in pulley gear; the other belt rests on the middle of the shaft, spins on a center gear and is routed directly to the front diff. Finally, getting the power to all four wheels are durable, steel U-joints.

### ULTRA-RIGID CHASSIS

As I mentioned, the YR-4 has a double-decker, black fiberglass chassis. A thin, black, fiberglass upper stiffener is bolted to the front, plastic bulkhead cap and the rear aluminum motor plate



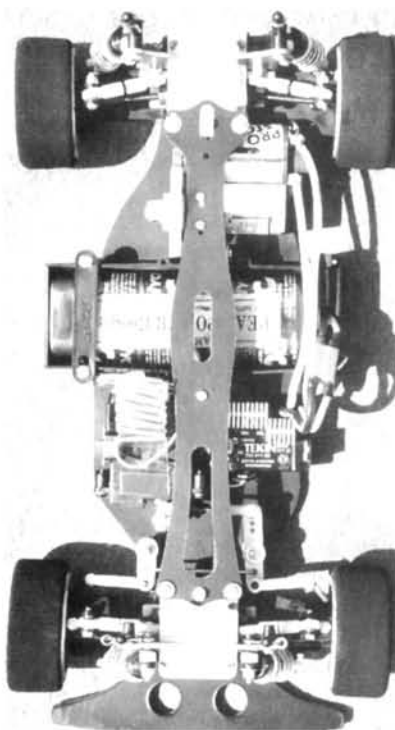
**The YR-4 comes with a set of green, six-spoke, ABS plastic wheels. I painted mine silver to match the body.**

and rear, white nylon, bulkhead cap. For added rigidity, the stiffener is also bolted to a center

aluminum post. With the stiffener in place, there's almost no fore-and-aft chassis flexing and minimal side-to-side flexing.

The chassis underbelly has been decked out with countersunk screw holes, so there's no chance of scraping protruding screw heads along the pavement—definitely a no-no when it comes to on-road zip-pin'. When designing the chassis, Yokomo engineers included a special chassis slot so you can mount steering servos of various sizes.

Concerning the chassis and its overall layout, the only thing I disliked somewhat was the Kydex front bumper. It's bolted to the chassis, which already has very little ground clearance, and it could snag on bumps when the front suspension is fully compressed. I heard a hot tip, though: heat the base of the bumper (the area closest to the chassis) with a hair dryer, and lift its front slightly to increase ground clearance.



The steering assembly is one area where I suggest you take your time. A Z-bend wire connects the two, white nylon steering bellcranks. When I built the assembly, I tried turning the wheels, and the action of the steering bellcranks was a little stiffer than I'd like it to be. I took it apart, removed the Z-bend wire and reamed out the holes so the wire would move more freely between them. With that little mod completed, the bellcranks turned much more easily.

Toward the rear of the chassis, there's a plastic battery box that will accept a 6-cell pack. You can't use seven cells because, ideally, the seventh one should be directly on top of and in the middle of the pack; but



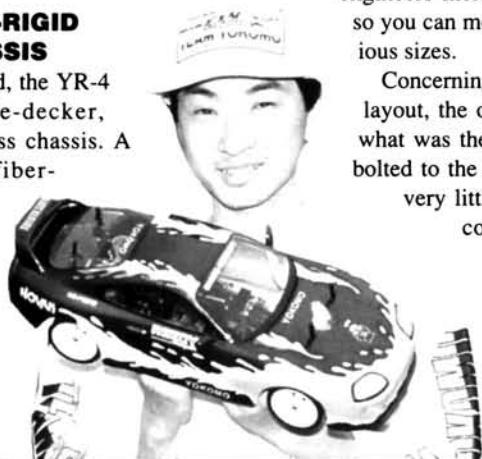
**This Yokomo Pro Stock 12 motor is absolutely ballistic! We were all amazed at how fast it was.**

you wouldn't be able to use that kind of pack in the YR-4 because the stiffener and belt-drive system don't allow that type of battery-pack configuration. On both sides of the battery box there's a small bronze-bushed roller that smoothly guides the front diff belt above the box.

### SUPRA'S SUPER SUSPENSION

The YR-4's 4W independent suspension system works extremely well. Short, black nylon suspension arms are mounted on the front and rear aluminum bulkheads in the standard hinge-pin fashion. The nylon arms have a trick factory look to them; certain sections have been milled out for lightness, but they're still rigid.

The car's front end



## Masami's Ride

**W**hen Masami began to prepare his YR-4 for the Japanese parking lot circuit on which he races, he went all out and chose the best equipment. The car is an on-road masterpiece. Here's a quick peek at what he runs in his car.

- Graphite chassis, shock tower and upper deck (ZR-GS)
- Slipper clutch (ZC-670C)
- High-grip, narrow, rubber front tires (ZR-050)
- Super-grip, narrow, rubber rear tires (ZR-053)
- Rear anti-roll bar (ZR-412R)
- Standard shock springs with Yokomo 600WT oil (YS-3SH)
- Titanium screw set (ZR-030)
- Yokomo Works 1700 SCRC battery
- Reedy\* motor
- Lightweight parts set (ZR-031)
- Novak\* HPc ESC
- KO Propo 1001 FET servo

features adjustable toe-in/out and adjustable camber. Its rear has only adjustable camber. Two black fiberglass shock towers grace the front and rear ends. The front shock tower has two upper holes for shock mounting, whereas the rear shock tower has only one position for the shock. Adjustable plastic body mounts are bolted directly onto the shock towers. Speaking of shocks, the kit's small, aluminum-body shocks are spectacular. Not only do they work well, but they also look trick. Yokomo silver shock springs are included with the kit.

Overall, Yokomo's craftsmanship in the YR-4 is top-quality.

### BODY BY YOKE

As I said before, the Supra Body is highly detailed. The body comes with a plastic wing and two plastic side mirrors. I decided to paint my body silver—lookin' pretty sharp, isn't it? A complete set of decals is included with the body. I have to be honest; I just plain hate applying decals, but luckily for me, these weren't too difficult. The only decals I had any sort of problem with were the headlights and the large black decal that goes under the front windshield. Other than that, everything went smoothly.

Also, kudos to Yokomo for including some stylish-looking wheels with the kit. I painted the yellowish-green, ABS plastic, six-spoke wheels silver to match my car and make it look more like the real thing.

### ROAD PREP

With the car completed, I turned my attention to dialing in the running gear. I bolted in a Yokomo Pro Stock 12 motor. The Pro Stock 12 motor is exceptionally fast for a stocker; it's a 12-turn wind that really gets up and goes! I added a 20-tooth Titanium

Gold Robinson Racing\* pinion gear.

A Tekin\* 411G-2 ESC modified with Trinity\* 12-gauge wire gets its power from a 6-cell Yokomo Peak Power 1700 SCR battery pack. I equipped the battery pack and ESC with a set of Deans\* Ultra Plug battery connectors, and I hard-wired the ESC's motor wires directly to the motor.

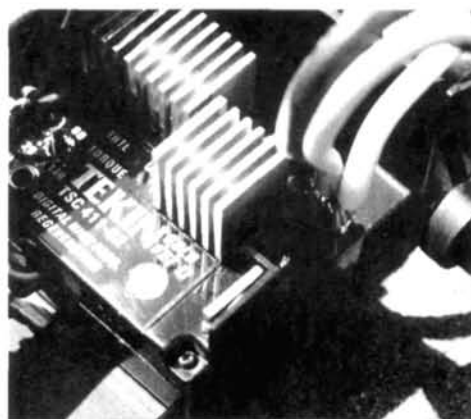
An awesome KO Propo\* FET-boosted 1001 servo provides the turning power; it's not only speedy, but also has a ton of torque. My trusty Futaba\* PCM 1024 radio controls the car. I custom-made an antenna holder out of some spare Lexan, and I mounted it on my servo. I didn't want to cut any more holes in this beautiful body; besides, it looks more realistic without an antenna popping out through the top.

### TRACK TIME

There's a go-cart track down the street near our office, so one day, executive editor Frank Masi and I headed there after work to test the car. I had run it on the asphalt in front of our office, but there wasn't enough room to run it wide open, so I couldn't pull the trigger back all the way. I was psyched to see exactly how fast this thing would really go.

I charged the battery on the new Tekin BC112A battery charger at 5 amps and was set to tear up some foam on the track—a large road-course where I knew I could blast the car wide open. I set the car on the

track and yanked the trigger back. "Whoa," exclaimed Frank, who hadn't yet seen how fast the Supra/YR-4 could go. "I think that



**Tekin's 411 G-2 ESC, modified with Trinity 12-gauge wire, gets the juice to the motor. The torque limiter is set to 140 amps, so I get rocket-like acceleration off the line.**

thing's faster than the gas car we were running here the other day!"

Indeed, the car was fast, but what about its handling characteristics? Well, it's definitely sure-footed. The track has a huge sweeper turn that most people have to slow down for (most cars push through the turn if the drivers throttle into it too much); but I kept the trigger pinned, and the car kept asking for more. Its 4WD really keeps it planted in the turns. Its turning capabilities are pretty good, but while I was running it, Frank mentioned that Yokomo produces a one-way front-diff bearing that will make it turn on a dime. Hmm...something to look into.

Basically, I'd describe driving the car as "point and shoot": point the front end in the direction you want it to go, and it's there—even at full throttle. Frank and I did manage to make it spin out a few times, but in all fairness, the course was a little bumpy and sandy.

Yokomo also produces a set of rubber tires for the car, and they provide increased traction. If you're interested, Yokomo also happens to offer a ton of hop-up items, such as a graphite chassis, shock towers and upper stiffener kit, a slipper clutch, special lightweight parts...and on and on and on....

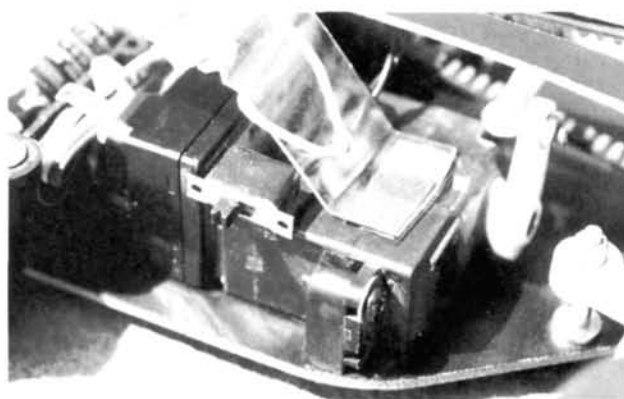
After seeing my car run, Frank told me he'd get a YR-4 as soon as he could. I'm sure that once he has his, we'll get together with a few buddies who have similar 4WD cars and start banging fenders on the go-cart track. Let the sedan wars begin!

\*Addresses are listed alphabetically in the Index of Manufacturers on page 153.



**The YR-4 comes with an awesome set of aluminum-body, oil-filled, coil-over shocks.**

**For my steering servo, I use a KO Propo 1001. I mounted my Futaba receiver directly behind the servo and custom-made a Lexan antenna holder so I didn't have to put the antenna through the top of the body.**

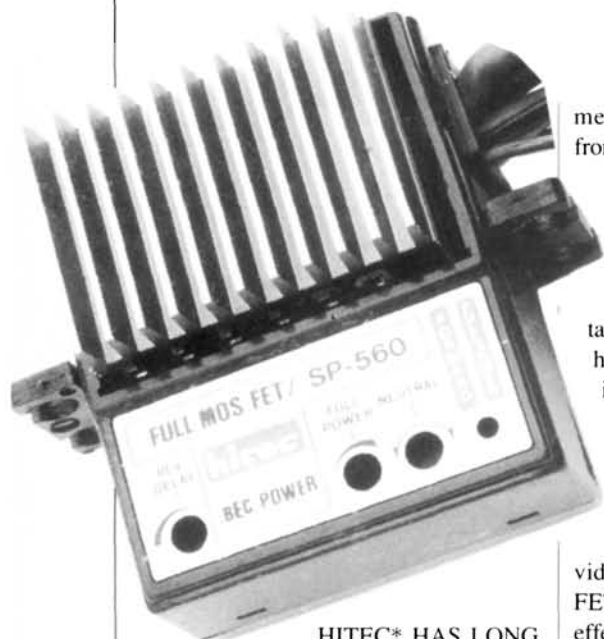




# SCOPING OUT

## HITEC SP-560

by JOHN RIST



HITEC\* HAS LONG been noted for offering the R/C hobby world high-quality hardware at reasonable prices. The company seems to have continued this tradition with the introduction of the SP-560 electronic speed controller (ESC).

R/C car owners don't always fully understand the amount of power an ESC must handle to drive our cars at the ballistic speeds that we expect. Because of this tremendous amount of raw power, simple mistakes quite often destroy speed controllers on the spot—upsetting, considering it's the car's most expensive component. To make the SP-560 bulletproof, Hitec has included such features as reverse-voltage protection, automatic thermal shutdown and a massive heat-sink system.

The heat-sink system is of particular interest because reversing speed controllers have a higher "on" resistance than racing speed controllers (forward only with brakes), and this can generate too much heat. The problem is compounded in reversing speed controllers because they have four groups of FETs (instead of a racing controller's two) that must be kept electrically insulated; if the FET heat tabs of a reversing ESC touch, you'll get a dead short that will cause a

meltdown. To prevent the heat sink from shorting the FETs, some reversing ESCs use FETs with insulated tabs. This is great for avoiding shorts, but it diminishes the FETs' ability to stay cool. To solve this problem, Hitec engineers use metal-tab FETs to provide a good path for the heat to escape. To achieve electrical isolation of the metal FET tabs, however, they've installed a boot made of heat-conductive, silicone rubber between the FETs and the massive heat sink. Also, because silicone rubber is soft and flexible, it provides full surface contact between the FETs and the heat sink, so it ensures effective heat transfer.

I open up every new speed controller to see whether it has the "right stuff" inside. The SP-560 was a little tricky to get open because it has a snap-together case (no screws), and it's easy to break off the plastic locking tabs that hold it together. But I found high-quality workmanship inside. All the solder joints look good, and all the parts are securely mounted. The controller has a single printed circuit board with the control circuitry on one half and the heavy current-handling FETs on the other. Heavy copper circuitry and large wire ensures efficient power transfer through the controller.

### HOW DOES IT MEASURE UP?

• **Test 1.** With 12 amps of current flowing, I measure the voltage drop across the ESC and then calculate its "on" resistance by dividing the measured voltage drop by 12. I measure resistance twice—along the full length of the motor wires and battery wires (including connectors) and 2 inches along them. The first reading helps me to determine an ESC's "on" resistance as it comes from the factory, and the second gives a standard reading with which I compare ESCs. Low "on" resistance is one of the

most important features in a speed controller; it ensures minimum power loss, and this means cool operation and faster speeds.

**End-to-end voltage drop:** 0.32 volt—a resistance of 0.026 ohm.

**Voltage drop 2 inches along the wires:** 0.19 volt—a resistance of 0.016 ohm.

Although not as low as that of a forward-only controller, this resistance compares favorably with those of other premium reversing speed controllers that I've tested.

• **Test 2.** I "cook" every controller I test by adjusting the resistor bank to pass 20 amps of current, jamming the throttle wide open and running the ESC for 15 minutes with the heat sink in place but without any air cooling.

After 15 minutes, the SP-560 was almost too hot to touch but not hot enough to cause thermal shutdown. If you use the heat sink and mount the controller so that it gets enough cooling air, the SP-560 should be able to withstand modified motors and 4-minute gearing.

### MAKE THE CONNECTION

With the testing finished, it was time to mount the SP-560 in a car and let it roll. Before you mount any speed controller in a car, read the instructions. The SP-560's short, but complete, instruction sheet describes how to mount it and set it up and includes a drawing that shows how to connect all the wires. An additional section covers motor capacitors and cooling air and proposes what I consider to be the number-one hop-up tip for controllers: performance can be improved by using short wires and racing-style connectors. The results of Test 1 show a significant difference between the end-to-end voltage drop and the drop at the 2-inch point (0.32 volt versus 0.19 volt). Hitec recommends that you eliminate the bullet-style motor connectors by soldering the motor

wires directly onto the motor. The SP-560 can be adapted to other battery connectors, but Hitec warns that replacing the existing connectors requires good soldering skills and attention to detail.

I installed the SP-560 in my trusty Kyosho Sideways—my backyard burning *fun* car. Whenever I run the car into a tree or a curb, reverse saves the day and keeps the fun rolling.

Installation was quite easy because my Sideways has a full set of connectors. I attached the SP-560 to the top deck with double-sided tape and plugged in the battery and motor connectors. Then I taped the on/off switch to the top of the receiver and plugged the receiver wire into channel 2. A few words of caution: the receiver connector isn't polarized; if you plug it in backward, it won't hurt anything, but the car won't run. To plug this connector in correctly, match its red and black wires to the steering servo's red and black wires.

The instructions outline a very good procedure for matching the controller to the transmitter. The two-color pulse-checking LED is a little different from some I've worked with. You might expect the green to be for forward and the red for reverse, but on the SP-560, both are related to forward. When the car starts to run forward, the green LED comes on. When the SP-560 achieves full throttle, the

green LED turns to red. A quick check with my oscilloscope verified that the LED is dead bang on target.

While looking at the output pulses with my oscilloscope, I observed that the SP-560 is a normal-frequency (60Hz) switching ESC rather than a high-frequency one. The output pulse looked very smooth when I advanced the throttle, however. The absence of high-frequency control didn't seem to effect the SP-560's drivability.

## NO SWEAT

With the SP-560 installed and several 6- and 7-cell battery packs charged, I headed to the local parking lot to give the Sideways a spin. I used a 6-cell pack first. Acceleration was strong, top speeds were fast, and run time was what I had expected for the Sideways' gearing (4- to 5-minute dumps). But the big surprise came when I checked for heating at the end of the run. The battery was warm, and the motor was hot, but the SP-560 was barely above air temperature. During a 4-minute run with good air flow over the heat sink, the SP-560 simply didn't work up a sweat.

On the next run, I tried a 7-cell pack. Performance went from fun to wild. During this run, I experimented with the reverse delay. With the delay set to minimum, I could slam the car between forward and reverse and do 180-degree sliding turns. (This is fun,

## SP-560 Features

- reverse
- 12 FETs: eight for forward, four for reverse;
- built-in automatic thermal shut-down and protection against reverse battery connection;
- built-in red and green pulse-checking LED;
- three adjustment pots: neutral, full speed and reverse delay;
- massive heat sink;
- two mounting options: servo-mounting ears or servo tape;
- full set of connectors: bullet motor, Tamiya-style battery connectors and a radio connector that's compatible with Futaba, JR, Hitec, Novak and Tekin receivers, or any receiver that uses a Futaba-compatible connector.
- instruction sheet, motor capacitors and adjustment screwdriver.

but it's rough on the gears.) Set to maximum, there's a 1-second delay before reverse kicks in. This is the best mode to protect the old gear train.

## CONCLUSION

The SP-560 is very capable and easy to install, and its resistance is low for a reversing controller. Although it got quite warm during the "cook" test, it barely exceeded air temperature during actual hard runs. This is proof positive that the SP-560's heat sink does a first-class job.

The dual-color LED pulse-checking system proved to be very accurate, and all the adjustment potentiometers have plenty of range so you can match the SP-560 to almost any transmitter. You have to match your transmitter's forward/reverse to the SP-560. If your transmitter doesn't have a throttle channel-reversing switch, make sure that its trigger travel matches the forward/reverse of the SP-560 before you buy it—especially if you own a low-end stick radio.

If you need to replace a pesky, burned-out mechanical speed controller, or if you're looking for a reversing ESC for a super scale project, give the SP-560 a test drive. It's a very capable performer at a reasonable price.

*\*Addresses are listed alphabetically in the Index of Manufacturers on page 153.*

## HITEC SP-560

Height (w/heat sink installed) .....1.13 in.  
Width (w/out servo ears) .....1.60 in.  
Length .....1.85 in.  
Weight (w/wires and heat sink) .....3.4 oz.

### TUNING

Access to controls .....Good  
Ease of adjustment .....Good

**LIST PRICE; WARRANTY** .....\$99.95;  
none listed

### ELECTRICAL (manufacturer's specs)

Max. voltage (7 cells) .....12 volts  
Min. voltage (5 cells) .....6 volts  
Max. current .....800 amps

Continuous current .....200 amps  
Resistance .....0.007 ohm

### TEST PARAMETERS

Voltage .....6 volts  
Current .....12 amps

### VOLTAGE DROP

—along full length of wires .....0.32 volt  
—2 in. along wires .....0.19 volt

### RESISTANCE

—along full length of wires .....0.026 ohm  
—2 in. along wires .....0.016 ohm  
BEC voltage, 6-cell pack .....6 volts  
Resistance = voltage drop/current

**COMMENTS:** the SP-560's "on" resistance is quite low for a reversing ESC. This should allow it to handle a modified motor. It can definitely handle a stock motor geared for a 4-minute dump. It got a little warm in the "cook" test, but it remained cool in actual use with air flowing over the heat sink. Although it isn't a high-frequency ESC, it drove very smoothly, with good acceleration and a fast top end. The SP-560's pulse-checking LED is very accurate, and the neutral and high-speed adjustment potentiometers worked well to match the SP-560's response to my transmitter. Another nice feature is its reverse delay, which can be adjusted from 0.1 to 1.0 second—a range that covers gear-jamming wheelies to gear-protecting calm.



**IF YOU** WANT to get into radio-control cars, but you've heard that really good ones cost lots of dough, have we got some news for you! There are many, high-quality, *inexpensive* R/C cars and trucks out there.

To show you what we mean, we rounded up three of the hottest off-roader kits we could find with a list price of less than \$150: the Tamiya\*

Super Hornet, Kyosho\* Outrage and Traxxas\* Rad 2—all 2WD, electric-powered off-road buggies that deliver a big bang for relatively low bucks.

We also put together a sample package that, for less than \$200 at most hobby shops, includes *everything* you'll need to get one of these blasters up and running: an inexpensive, 2-channel radio system; a low-buck, timed battery charger; and, of course, a battery pack.





We evaluated these cars thoroughly—not just their performance and durability, but the completeness of their instructions, the quality of their parts and their ease of assembly. Does the car come with a speed controller and a motor? Are parts easy to find? These are the types of questions newcomers most frequently ask, and they're questions that we'll try to answer for you in this guide.

The Super Hornet, the Outrage and

the Rad 2 are all excellent, budget-priced off-roaders, but they aren't intended for all-out racing. We decided to toss two of the hottest-selling, low-priced race cars—the Team Losi\* Junior Two and the Associated\* RC10 Championship Edition—into our comparison to see how the true entry-level cars would fare against them. Both the RC10 CE and the Junior Two have bushings, but only the RC10 comes with a motor and a speed controller.



ty! R/C off-Road  
is cheaper than  
you think!

by Frank Masi



# Get Dirty

features department. It has a very durable, molded-nylon tub chassis that provides plenty of protection for the car's electronics. Like a full racing machine, this buggy has 4W independent suspension with molded-nylon arms,



strong fiberglass shock towers and large-volume, plastic shocks that are oil-filled for better handling. The Rad 2 also has a beefy transmission that uses a metal-gear, planetary differential, a fully adjustable slipper clutch and two ball bearings for its upper shaft. Two-piece, molded slider drive shafts and a pinion gear for the 540 motor are nice touches.

This particular car was a test sample that came fully assembled from Traxxas, but, having built a Rad 2 for a pre-

## Ready to Run; Ready for Fun

Interested in R/C cars, but the prospect of long hours of building is dampening your enthusiasm? Fear not! Several R/C car manufacturers offer ready-to-run (RTR) kits that come almost completely assembled and substantially cut down the time it takes to go from box to track.

Most RTR kits come 90 percent built, and all that's needed to get them running is the installation of a 2-channel radio system and a charged battery pack (which you must supply) and the painting and mounting of the body.

**Jake and Jill are ready-to-run while their companions blah blah blah.**



### Traxxas Rad 2

Our test kit was model number 2301, which includes a motor and a rotary-type, mechanical speed controller. In many of our evaluations, the Rad 2 was the star, especially in the

skill  
LEVEL  
3

vious test, we recommend this kit for Level 3 builders because of its somewhat high-tech design. Its comprehensive instruction manual, which has clear photos and text and informative tuning tips, scored well.

On the track, the Rad 2 performed well. Its new, longer front shocks and its long wheel-base and wide stance made it very stable over rough sections, and handling was very nearly equal to that of a budget, racing-type car. Gear diffs have a tendency to make driving on slick surfaces troublesome, but with its slipper clutch, the Rad 2 proved quite manageable on most dirt and asphalt surfaces. The Rad 2's rotary speed controller performed adequately, but it was a little rough between speeds; a light touch on the throttle was needed to stay in control.

### Tamiya Super Hornet

The original Hornet was the first R/C car of many, many hobbyists. Its durable, simple design provided countless hours of bashing—off- and on-road. The Super Hornet is everything its predecessor was and more. Longer front suspension arms combined with four new, plastic, oil-filled shocks make handling sure-footed and more precise. More suspension travel in the rear also contributes to an improved feeling of security on rough surfaces.



The Super Hornet's new, molded tub chassis is made of ABS resin, so it's stiffer than that of the old car, and its body is molded out of a rigid, black material that you can paint

skill  
LEVEL  
1



from the outside (unlike the clear, Lexan bodies of most other cars, which must be painted from the inside). The new body should be a little tougher, but it's heavier. New, one-piece, large-diameter wheels with ribbed front tires and large-





skill  
LEVEL 2



### Kyosho Outrage

The Outrage replaces the Raider as Kyosho's entry-level, 2WD, off-road buggy. A durable, molded-plastic tub chassis gives the Outrage a strong backbone and acts as a secure platform for its 4W independent suspension. Stiff, molded suspension arms are cushioned by plastic, oil-filled shocks, and the shock towers are molded of plastic so they'll resist breaking in a rollover.

The transmission has molded-nylon gears and a sealed, bevel-gear diff; metal bushings are used not only in the tranny, but also for all four wheels. The kit we tested came with a pinion gear, Kyosho's rotary-type mechanical speed controller and a 540 stock motor. Hot-looking, aero-type three-piece wheels with ribbed front tires and spiked rears are part of the package, but assembling the wheels was difficult and frustrating.

Kyosho's informative instructions are laid out in a logical way and include many clear illustrations, but some of the steps left our staff a little confused—probably a result of the Japanese-to-English translation. Overall, the quality of the kit is good, and assembly went smoothly.

On the test track, the Outrage generally performed better than its bargain-basement price would suggest. Its suspension easily soaked up most small bumps, though our testers agreed that some suspension tuning would help the car handle larger bumps and ruts more easily.

Also, with no slipper clutch, on certain slick surfaces, spinouts were difficult to avoid; but on pavement and grass, the Outrage accelerated briskly and cornered very well,

especially at high speeds. Replacing the car's molded, one-piece, upper suspension links with adjustable tie rods would add some tuning versatility and further increase the Outrage's fun factor.

spike rears provide good grip on most soft surfaces.

Our test car came with a three-speed forward-and-reverse mechanical speed controller and a 540-size motor. The complete wiring is in place, and all you have to do is plug it in. The Super Hornet was the easiest to build of our test cars and received a "1" rating. Its molded parts fit together well, and Tamiya's instruction manual is the current industry benchmark of clarity and logic.

The Super Hornet is more at home in the yard and on the street than on the racetrack. Its solid rear-axle design compromises handling on bumpy surfaces, but we did notice a significant improvement over the previous Hornet, and we attribute this to the new, oil-filled shocks. For general bashing and mishaps, the Super Hornet is among the best; we repeatedly slammed it into curbs at full speed without damaging it. The large front bumper does an admirable job of protecting the front suspension.

## skill Level ReQuirEd

We rated each kit for ease of assembly. Our expert testers have logged countless hours building all types of car kits, and they gave their opinions on how our test cars stacked up.

### Ratings

- 1—Easiest kit to assemble. Anyone 10 years old or older is capable of building this kit.
- 2—Only basic tools and knowledge required to complete.
- 3—Same as 2, though younger builders might need some adult supervision.
- 4—Experience is helpful but not essential.
- 5—Primarily for advanced builders; some complicated assembly; unclear instructions.





## Reading the Chart

Entry level isn't what it used to be; the cars are better, and hobbyists are better informed and more demanding. To make a mark for itself in today's hobby market, an entry-level car must be packed with some pretty impressive features. This explains the features shown on our chart:

**4W independent suspension** is more efficient when it comes to soaking up bumps. It also improves a car's acceleration, especially when running off-road.

**Differentials.** Gear diffs (both planetary and bevel) are easy to assemble and maintain, but they tend to make a car spin out more easily. Ball diffs are more complicated and require some maintenance, but they improve handling and cornering.

**Oil-filled shocks** provide superior handling on all surfaces. In addition, they can be fine-tuned for even better performance. All of our test cars have oil-filled bouncers.

**Bushings.** Of the three cars, only the Traxxas Rad 2 contained ball bearings (two of them in the transmission). Bushings are used everywhere else and on the other cars. Bushings don't rotate as freely as ball bearings, but they're much less expensive. We prefer metal bushings to plastic ones, but there's no concrete evidence to confirm that metal bushings perform better than plastic ones.

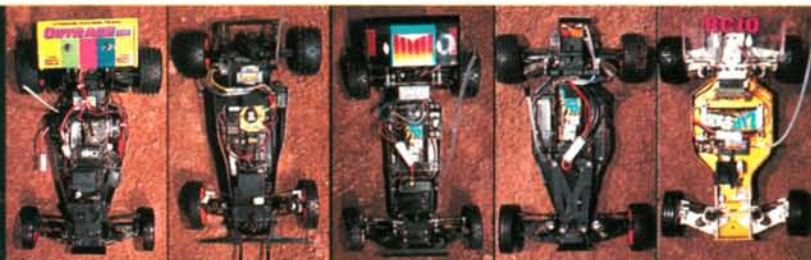
**Motor and speed controller.** Cars that come with a motor and a mechanical speed controller get you onto the track for less money. Four of our cars come with a speed controller and a stock-type motor. For their smoothness and drivability, we prefer the resistor-type controllers to the rotary, step-type controllers.

**Adjustable camber rods** let you set a car's camber angle. Camber is the tire's position in relation to the road, and it affects how a car steers and how its tires wear.

**Turnbuckle tie rods.** You can set their length without removing them from the car.

**Slipper clutch.** This prevents the car from spinning out, and it can actually reduce wear and tear on transmission parts. When used with a gear differential, a slipper clutch makes a car much easier to drive, especially on slippery surfaces.

## FEATURES



Kyosho  
Outrage

Tamiya  
Super Hornet

Traxxas  
Rad 2

Team Losi  
Junior Two

Associated  
R10 CE

4W independent susp.	✓	-	✓	✓	✓
Planetary gear diff	-	-	✓	-	-
Bevel-gear diff	✓	✓	-	-	-
Ball diff	-	-	-	✓	✓
Oil-filled shocks	✓	✓	✓	✓	✓
Metal bushings	-	-	✓	✓	✓
Plastic bushings	✓	✓	-	✓	-
Speed controller	✓	✓	✓	-	✓
BEC	✓	✓	✓	-	✓
540 motor	✓	✓	✓	-	✓
Adj. camber rods	-	-	✓	✓	✓
Turnbuckle tie rods	-	-	✓	-	✓
Slipper clutch	-	-	✓	-	✓
Pinion gear incl.	✓	✓	✓	✓	✓
<b>SPECIFICATIONS</b>					
Overall length	14.8 in.	16 in.	15.75 in.	15 in.	15 in.
Wheelbase	10.88 in.	10 in.	11.18 in.	11.25 in.	10.25 in.
Front width	8.8 in.	8.18 in.	9.25 in.	9.5 in.	9.125 in.
Rear width	9.63 in.	8.88 in.	9.63 in.	9.625 in.	9.5 in.
Weight w/bat.	3 lb., 4.9 oz.	3 lb., 3 oz.	3 lb., 8 oz.	3 lb., 5.5 oz.	3 lb., 9 oz.
Chassis	Plastic tub	Plastic tub	Plastic tub	Molded channel	Aluminum tub
Front wheel (DxW)	2x0.75 in.	2.2x0.75 in.	2.15x0.875 in.	2.1x0.875 in.	2.1x0.625 in.
Rear wheel (DxW)	2x1.375 in.	2.1x1.375 in.	2.15x1.375 in.	2.1x1.375 in.	2.1x1.25 in.
<b>PRICES</b>					
List price	\$119.95	\$130.00	\$150.00	\$129.95	\$230.00
Average hobby shop	\$89.66	\$79.00	\$84.89	\$81.71	\$124.47
Package price	\$199.81	\$189.15	\$195.04	\$191.86**	\$234.60
<b>EDITORS' RATINGS*</b>					
Parts quality	3	2	2	1	2
Skill level req'd.	2	1	3	4	4
Instruction manual	3	1	2	2	2
Factory support	2	3	2	1	1
Completeness	1	1	1	4	1
Performance	3	4	2	2	2
Durability	2	2	2	1	1
Value	1	1	1	1	3
<b>TOTAL SCORE</b>	<b>17</b>	<b>15</b>	<b>15</b>	<b>16</b>	<b>16</b>

\*Highly subjective and sometimes irrational. Our opinions only. Ratings are given in values of 1 through 5, with 1 being the highest and 5 the lowest. Lowest total score denotes superior rating.

\*\*The Junior Two doesn't come with a motor or speed controller, which must both be purchased separately. By rearranging our package, we could probably outfit the Junior Two with a motor and an electronic speed controller for under \$250.

### EXPLAINING THE EDITORS' RATINGS

It's not easy being a magazine editor. When it comes to evaluating products, you must put aside your opinions and be as objective as possible. Our editorial staff spent a week building, testing and then discussing the merits and features of our budget off-roaders, to come up with fair and equal comparison. Here's how we judged the cars:

■ **Parts quality.** We evaluated each kit's parts by how well they were finished and the type of material used. Parts with excessive flashing received a lower score. Also, how well the parts fit together was important to a good rating.

■ **Skill level required.** Rates the difficulty of building each kit. Level 1 kits are easiest; Level 5 are the hardest to build. Generally, a more sophisticated kit will require additional time and skill to complete and thus receive a higher score.

■ **Instruction manual.** A good set of instructions is invaluable to first-time builders and experts. Instructions were graded on the clarity of text and the quality of photos and illustrations. Having troubleshooting and tuning sections was also a big plus.

■ **Factory support.** Rates how easy it is to get parts and accessories. Parts for some kits are readily found in hobby shops, but for others, parts must usually be ordered. Some manufacturers have technical hotlines you can call to ask questions.

■ **Completeness.** Shows how ready to run each kit is. Kits that came with speed controllers and motors rated better than those that didn't. When you're getting your feet wet, having everything in one box is a big help.

■ **Performance.** Subjective to the intended performance level of this segment; entry-level cars aren't expected to perform as well as race cars. We judged these cars by how well they held up to our less-than-gentle driving styles, both on the track as well as on short grass and pavement.

■ **Durability.** Evaluated during what we deemed "normal use." The cars were run on a variety of surfaces with various obstacles. Easily broken cars receive a higher numerical rating.

■ **Value.** Evaluates the kit's list price against the number of features it has, its quality and its design significance. In essence: compared with other kits of similar design and intent, does the kit deliver what it promises at a reasonable price?



## Team Associated RC10 Championship Edition

The RC10CE has been upgraded and now includes a bronze-bushing version of Associated's famous Stealth transmission, which is used in all of Associated's top-line racing buggies and trucks. Gold-anodized versions of Associated's Team Shocks come standard, and they include new, improved, Teflon seals and shock pistons. The kit also includes the same 1.02-inch-long front shock shafts and 1.32-inch-long rear shock shafts as those on the full-race Team Car.

skill  
LEVEL 4



New rear suspension arms molded out of a stronger material come without the previous arms' travel down-stops, which had to be removed during building. The three-piece, molded wheels can be used time and time again for different types of tire. The CE also comes with new, 30-degree, front-caster blocks that improve the car's steering and make it easier to drive. This kit's resistor-type mechanical speed controller is the best one we've tested yet. Power is delivered smoothly, and the resistor itself proved quite durable. A Reedy Modifieds\* Outlaw stock motor, complete with noise-suppression capacitors,

an 81-tooth, molded spur gear and a 21-tooth steel pinion gear are standard.

Overall, the CE scored well against our entry-level buggies. It was superior in both on-track performance and factory support, but because it's a racing buggy, its more complex nature earned it a skill level rating of

"4." Also, though its speed controller and included motor make it a complete package, the CE received lower marks in the value category because of its relatively higher price. (It's listed at nearly \$80 more than the next most expensive car in our test.) Still, if you're looking for a car you can start your racing career with, the RC10CE is very nearly a full-race Team Car for much less money, and that's a bargain!

## Team Losi Junior Two

If it came with a speed controller and a motor, the Junior Two would be considered an entry-level car, not a beginner's racecar. We say this because the purchase price of the items mentioned above raises the kit's price beyond our \$200 limit. Otherwise, you get a lot of great features with this car.

For starters, the Junior Two's molded chassis is a marvel of rigidity. Made of a material that Losi calls matrix-fiber/resin, the chassis is both light and strong—and cheap to replace in the event that the unthinkable happens. Stiff, molded suspension arms and large-volume, aluminum shocks highlight a suspension system that's truly race-ready—and adjustable. Camber, toe-in and many other settings can be tuned easily to soup up performance. Molded



skill  
LEVEL 4

shock towers are used because they won't be damaged during crashes.

An efficient transmission, which Losi refers to as "Low Rotating Mass," features an externally adjustable ball diff and molded, slider-

type drive shafts. Losi has just upgraded the Junior's tranny to include metal bushings, though plastic ones are used on the wheels. The great thing about this kit is that it can be outfitted with many of Team Losi's hop-up parts, including the Hydra Drive traction-control system, hard-anodized shocks and even the Double-X transmission.

The performance and durability of the Junior Two easily place it in the company of cars costing much more. Its suspension is responsive and can be tuned for most running conditions. Also, our test car showed little sign of wear after our exhaustive track testing—a testimony to its engineering and materials. The Junior Two isn't quite a beginner's car because it doesn't come with a motor or a speed controller, but it lacks a couple of features that would qualify it as an all-out racing car. After all is said and done, however, we're still collectively scratching our heads trying to figure out how Losi can sell this car at such a low price.

# Dealer Prep

The five kits covered in this feature are of high quality, and we recommend all of them for novice to intermediate drivers; but keep several things in mind when you plunk down your hard-earned cash:

■ Make sure that your hobby shop stocks replacement parts for the kit you intend to buy. Believe us when we say that it's no fun waiting for parts to come by UPS when you could be out kickin' up some dirt! If your hobby shop doesn't have a large supply of parts for your new kit, check with the shop owner to see how frequently he places orders with his distributors. If orders are placed twice a week, you'll have your part in no time, but you'll be miserable if they're placed biweekly.

■ Before leaving the store with your new wheels, "kick the tires" a little. Now is the time to open the box and make sure that everything that's supposed to be there is, in fact, there. If possible, do this with a shop employee present. If something is missing from the kit and it isn't in stock, have the employee write an order for it then and there.



■ You've probably just spent a good deal of money, but—we hate to say this—now is the time to spend more! Trust us; get what you need right away—possibly including a radio system, a battery pack and a charger—because you'll have the kit built before you know it, and you'll be itching to get out and run it. It will also save you a lot of trips to the hobby shop later on. Your dealer should be able to tell you what you'll need to get started.

■ If your kit has bushings, inquire about ball bearings. Bearings add significantly to a car's acceleration and top speed, and you'll get longer run times from your battery. If the price is right, go for the bearings; in most cases, it's much easier to install them while you're building than to do it later on.



## Glossary of R/C Car Terms

**Anodizing**—a process by which a metal object is electrolytically coated with a protective oxide. Many of the aluminum parts on R/C cars, e.g., the RC10's gold shocks and its chassis, have been anodized; it increases their durability and attractiveness.

**BEC**—battery-eliminator circuit. This allows the radio receiver in your car to be powered by the main Ni-Cd pack instead of by an additional AA pack.

**Bearings**—ball bearings. Bearings are a ring-shaped track in which there are small, freely rotating metal balls. Bearings decrease your car's drag, and that allows it to travel faster and run longer on a charge. They operate with much less friction than bushings, but they're more expensive.

**Bushings**—metal or plastic linings that reduce friction in rotating parts. Bronze and molded-plastic bushings are most common in R/C car kits. They're inexpensive to replace, but they operate with more friction than bearings.

**Capacitor**—an electric-circuit element used to store an electric charge temporarily. Capacitors are used to suppress the glitch-causing voltage spikes caused by motor "noise" (the same as the blow-dryer "noise" that interferes with your TV set).

**Differential (diff)**—a mechanical device that allows two driven wheels to rotate at different speeds. When a car corners, a differential allows the inside driven wheel to rotate more slowly than the outside driven wheel. In R/C cars, two types of diff are used: gear diffs, which are usually found in less expensive cars, and ball diffs, which are like the limited-slip diffs in full-size performance cars and are usually found on more expensive R/C cars.

**Electronic speed controller (ESC)**. A speed controller regulates the amount of battery voltage traveling to the car's motor—like the gas pedal in your full-size car. An ESC is the most efficient form of throttle control available, and it's our most often recommended upgrade. Driving a car with an ESC is easier, and it will make your batteries and motors last longer.

**Mechanical speed controller**. This uses a series of electrical contacts—each with varying resistance—to regulate motor current. A separate servo activates a mechanical controller. They're found mostly on less expensive, fun-type kits, because they're much cheaper than ESCs.

**Pinion gear**—the small, metal (aluminum or steel) gear that's attached to the motor's output shaft. The pinion gear meshes with the transmission's spur gear to power the car.

**Shock pistons** control the resistance in each shock. The shock is filled with oil, and the piston is attached to the shock shaft. When the shock is compressed, the piston moves inside the shock. For the piston to move, the shock oil must be able to flow through small holes, or notches, in the piston. The size of these holes and the thickness of the oil determine the shock's resistance, or damping.

**Slipper clutch**. A slipper clutch helps to regulate the car's wheelspin by reducing the motor's initial "punch." Most slippers use friction to accomplish this. Usually, a slipper clutch is attached to the transmission's input shaft (to which the spur gear is also attached). Most clutches can be adjusted so that you can easily set the desired amount of slip.

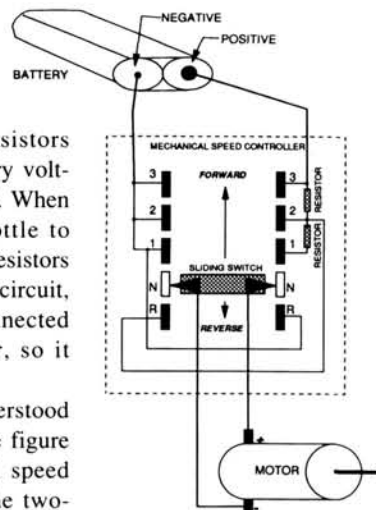
**Spur gear**. This is the large gear on the outside of your car's transmission. The motor—through the pinion gear—drives the spur gear. The spur gear is attached to the transmission's top shaft.

**Turnbuckle** refers to an adjustable threaded rod on which half the threads are right-handed and half are left-handed. Turnbuckles allow you to adjust your car's suspension without having to pop off the tie-rod ends.



radio. If you understand how the controller works, you'll be able to deal with any problems that plague it.

A mechanical speed controller consists of a servo, a sliding switch and several dropping resistors. The throttle servo arm is attached to the switch. As you pull or push the trigger on your transmitter, the servo arm moves, advancing the switch through its various positions. As the switch moves, it alters the car's speed by inserting or removing resistors between the battery and the motor. When the switch places all of the resistance between the battery and the motor, the resistors rob the motor of battery voltage, and it runs slowly. When you advance the throttle to wide open, all of the resistors are removed from the circuit, and the battery is connected directly to the motor, so it runs fast.



All this can be understood better if we look at the figure showing a mechanical speed controller. It shows the two-pole switch in the neutral position; in this position, no voltage is going to the motor, and it stops running.

- When you squeeze the trigger a little (apply a little forward throttle), the servo advances the sliding switch to position one. With the switch in this position, both resistors are in series with the motor. This puts maximum resistance in the loop and makes the motor run slowly.
- When you advance the throttle to mid-range, the sliding switch advances to position two. With the controller in the second position, only one of the resistors is in series with the motor. This reduces resistance by half and allows the motor to run faster.
- When you advance the throttle to full forward, the sliding switch advances to position three. In this position, all the resistors are bypassed and the battery is connected directly to the motor, providing full throttle.
- When you push the trigger to reverse, the sliding switch goes to position "R." If you follow the diagram carefully, with the switch in this position, you will find that the motor's plus terminal is connected to the battery's minus terminal, and the motor's minus terminal is connected through one resistor to the battery's plus terminal. This will make the motor run backward at a medium speed.

## TROUBLESHOOTING

If your car will run at full speed but not at slower speeds, you probably have a burned-out resistor, which can also kill reverse. If your car won't run at all but the steering works, you probably have a broken wire or a burned-up rotary switch. If nothing works, check for a dead battery, broken wires or a faulty transmitter or receiver.

—John Rist

For many years, John Rist has reviewed speed controllers in his monthly R/C Car Action column, "Scoping Out."

# List Price? NO WAY!

List prices will give you a good idea of how much—tops!—you might have to spend to get into the hobby, but few hobby shops or mail-order facilities charge full retail for any car kit or accessory. We've done some detective work for you and have come up with prices that reflect what the average hobby shop will charge you for our combo. Of course, bear in mind that our prices are averages based on a survey of six hobby shops in different parts of the U.S. Your local shop may charge more or less.

**Radio** • Airtronics\* Rival 2P, 2-channel transmitter with 92621 receiver and two 94102 servos.

- List price—\$139.95
- Average price—\$63.97

**Charger** • Hobbico's\* 900 AC/DC charger has a built-in timer and works off household current or an automotive battery.

- List price—\$39.95
- Average price—\$29.99

**Battery** • Trinity's\* Zip Pak (six cells)

- List price—\$21.99 • Average price—\$16.19

**Total average price—\$110.15.** Add the cost of one of our budget basher cars, and you're out the door for just under \$200!



# Test Crew

So who charged the packs, hit the dirt and then spilled the beans on which car was it and which car wasn't...?

**X John "Cool" Huber**—*Car Action* contributing author/photographer.

*R/C claim to fame:* owns more R/C cars than most hobby shops; can build almost any kit in one night.

**X Frank "Howdy" Masi**—*Car Action* executive editor/wannabe photojournalist.

*R/C claim to fame:* at the '92 Kyosho Gas Challenge, helped Jack Johnson lose the 1/8-scale buggy A-Main, choked during the 1/10-scale truck A-Main (losing with only seconds to go) and still remains pompous; draws inspiration for R/C projects from "Mystery Science Theater 3000."

**X John "Snoop Doogie Dogg" Howell**—*Car Action* associate editor.

*R/C claim to fame:* has more secret projects than the CIA; spent 15 years working on his "Big Stupid Truck."

**X Chris "Merlin" Chianelli**—*Car Action* senior editor (or is it senile editor?).

*R/C claim to fame:* can blow up almost any speed controller just by plugging in a battery pack; thinks the thing on his head is still in style.

**X Jonathan "I'm calling Europe" Biebesheimer**—*Car Action* contributing author.

*R/C claim to fame:* utilizes a secret connection in the R/C world (we'd have to kill you if we told you); once called Zimbabwe to verify an R/C rumor.

**X Paul "Zippy" Onorato**—*Car Action* contributing author.

*R/C claim to fame:* started his career by getting his "Reader's Ride" published; has gone downhill ever since.



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### ■ 1/8 and 1/10 GAS

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MUGEN 1/8 SUPER SPORT 4WD TRUCK	\$379.95
MUGEN 1/8 SPORT SEVEN W/MOTOR 4WD BUGGY	\$384.95
OFNA 1/8 PIRATE RS 4WD BUGGY	\$389.95
OFNA 1/8 PIRATE M1 4WD BUGGY	\$249.95
OFNA 1/8 HODR 4WD BUGGY	\$274.95
OFNA 1/8 TEMPO 4WD BUGGY	\$219.95
TRAXXAS 1/10 NITRO HAWK TRUCK #3104	\$249.95
MUGEN 1/8 ATHLETE 4WD BUGGY	
TEAM ASSOC. 1/10 RC10GT SPORTS TRUCK #7055	\$179.95
TEAM ASSOC. 1/10 RC10GT SPORTS TRUCK #7056	\$254.95
TEAM ASSOC. 1/10 RC10GT TEAM TRUCK #7065,7066	\$249.95
TEAM ASSOC. 1/10 RC10GT TEAM TRUCK #7075	\$324.95
TEAM ASSOC. 1/10 RC10GT TEAM TRUCK #7076	\$319.95
SERPENT "NEW MODEL" 1/10 IMPACT 2-SPEED W/MEGA RS15	\$444.95
SERPENT 1/10 IMPACT FOR O.S. CZ R #8025	\$329.95
YOKOMO RX-12C .12	\$CALL
YOKOMO RX-12CS .12 W/PULL-START	\$CALL

#### CALL FOR O.S. ENGINES AT LOW DISCOUNT PRICES

OFNA .21 BRAT	\$89.95
NOVA ROSSI .21 2000 REDHEAD 6-PORT	\$209.95
PARIS PICCO .21 5-PORT	\$229.95
PARIS PICCO .21 5-PORT MODIFIED	\$279.95
BRAT .21 PULL-START	\$174.95
PICCO .15	\$169.95
PICCO .15 MODIFIED	\$189.95
MEGA .15 RS15	\$159.95
MONDIAL .15	\$189.95

### ■ 1/8 AND 1/10 ELECTRIC CARS

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YOKOMO YR-4 COMPETITION TOURING 4WD KIT	\$CALL
YOKOMO YZ-10N 4WD OFF-ROAD BUGGY	\$CALL
YOKOMO "NEW MODEL" WORKS '93 4WD OFF-ROAD BUGGY	\$299.95
YOKOMO "NEW MODEL" HONDA NSX ON-ROAD CAR	\$169.95

YOKOMO "NEW MODEL" FERRARI F40 ON-ROAD CAR	\$189.95
YOKOMO "NEW MODEL" NISSAN GTP ON-ROAD CAR	\$189.95
YOKOMO "NEW MODEL" JAGUAR GTP ON-ROAD CAR	\$189.95
TOMY INTRUDER 4WD OFF-ROAD BUGGY	\$279.95
MRC 1/8 THUNDER KING OFF-ROAD TRUCK	\$189.95
MRC 1/8 THUNDER THUNDER OFF-ROAD BUGGY	\$179.95
MRC 1/8 BAJA KING—NO ELECTRICS	\$209.95
MRC 1/8 BAJA KING—W/ELECTRICS	\$229.95
TEAM ASSOC. "NEW" RC10T TEAM TRUCK #7035	\$159.95
TEAM ASSOC. RC10 TEAM CAR #6035	\$144.95
TEAM ASSOC. "NEW" 10LS ON-ROAD GRAPHITE #8010	\$139.95
TEAM LOSI "NEW" LX-T TRUCK W/XX TRANNY #A-0056	\$174.95

### ■ RADIOS AND SPEED CONTROLLERS

AIRTRONICS RV2P SPORT	\$37.95
AIRTRONICS "NEW" RV2P RIVAL PISTOL-GRIP RADIO	\$62.95
AIRTRONICS XL2P PISTOL-GRIP RADIO	\$79.95
FUTABA 2V ATTACK-III 2-STICK RADIO	\$49.95
FUTABA 2PB MAGNUM SPORT PISTOL-GRIP	\$56.95
NOVAK 410 M5 ELECTRONIC SPEED CONTROL	\$64.95
NOVAK 410-HPC ELECTRONIC SPEED CONTROL	\$109.95

### ■ BATTERIES, CHARGERS AND POWER SUPPLIES

TRINITY 6-CELL ZIP PACK	\$14.95
DYNAMITE 6-CELL SPORT 1400 SCR	\$15.95
ASTRO FLIGHT 115 AC/DC VARIABLE-RATE CHARGER	\$42.95
PROTECH 702 AC/DC 6- TO 7-CELL CHARGER	\$44.95
TEKIN BC100L PEAK CHARGER	\$59.95
PYRAMID PS-12, 10A POWER SUPPLY	\$39.95
PYRAMID PS-14, 12A POWER SUPPLY	\$49.95
VICTOR ENG. 12A IQ POWER SUPPLY	\$89.95
RIVERGATE PC-30, 30A POWER SUPPLY	\$124.95

### ■ ELECTRIC MOTORS

TRINITY GREEN MACHING STOCK MOTOR	\$17.95
TRINITY SLOT MACHINE STOCK MOTOR	\$17.95
PEAK PERF. SON OF PSYCHO STOCK MOTOR	\$17.95
YOKOMO IMPULSE MODIFIED MOTORS	\$CALL

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# NEW PRODUCT WATCH

# ROBART Snake Oil

by  
JOHN  
HUBER

**A** LUBE IS a lube, right? Wrong. Although they may look the same, every lubricant has a special purpose and application. Do you think WD-40 is all right for your ball bearings? Wrong again. The "WD" in WD-40 stands for "water displacement." It's great for freeing a frozen lock or fixing a squeaky hinge, but it's not the right stuff for every application. To meet the needs of R/C enthusiasts, Robart\* now offers a variety of Snake Oil lubricants.

## Radical reptile VENOM!

### • POWER-REV R/C ENGINE TREATMENT

is an after-run oil that protects your engine while it's not in use. It contains a protective substance called "SP-10" that reportedly bonds to metal at a molecular level.

Fuel that's left in the crankcase will attract moisture. You might think this is nonsense, but it happens. Fuel collects at the bottom of the engine and partially soaks the bearing inside. The moisture then begins to pit the balls in the bearing; this will ruin the engine or significantly shorten its life. Always burn all the fuel in the tank, and then treat the engine with Power-Rev. I've used Power-Rev on my .12 engine for the past couple of months, and there haven't been any signs of corrosion or rust on the bearings.

### • POWER-REV R/C FUEL TREATMENT

is added directly to your fuel. It stabilizes the fuel and helps to lubricate the engine and the fuel system. It, also, contains SP-10. Contributing author Mike Lee tested Power-Rev in a plane engine. He ran a used engine on untreated fuel and measured rpm with a digital tach. Then he tested the treated fuel. He noticed a definite gain in rpm right away. He ran the engine until the tank was empty; then he treated it with the after-run oil. To thoroughly flush it out, he ran two tanks of

untreated fuel through the engine. Still using the untreated fuel, Mike tested the engine again. The gain

in rpm was still there! Sounds good enough for me.

### • R/C 2-CYCLE OIL

is for you 1/4-scale guys out there. If it does so well in nitro fuel, I'm sure it will do the same with gasoline.

### • POWER-GLIDE BEARING GREASE



is a high-quality, water-repellent grease that sticks where you put it. I tried it on some bushings, and it worked very well. And because it didn't fly off in the first couple feet, the bushings were protected for a long time. It's also great for needle bearings in clutch assemblies.

### • POWER-GLIDE R/C BEARING LUBRICANT

is specially made for ball bearings. It's thinner than the bearing grease, and it will penetrate into the bearing seals, leaving the SP-10 behind. Because it's water-repellent, a quick wipe will also protect your metal parts and tools. For added convenience, try the spray.

After I had run my RC10GT in the snow, I noticed little spots of rust on the hinge pins and rear dog-bones. I sprayed the steel parts with a little lubricant and let it sit. The next day, it looked as if it had evaporated, but you could feel the SP-10 on the parts. Needless to say, the rust never returned.

Snake Oil offers a lube for every need. The next time you're at a hobby shop, check out one or all of them; you won't be disappointed.

\*Addresses are listed alphabetically in the Index of Manufacturers on page 153.



PHOTOS BY JOHN HUBER

# "Take me to your leader"

NEW  
PRODUCT  
WATCH

## JR REMOTE CONTROL

# X-756

by FRANK MASI

**I**F YOU'RE like me, you began your R/C car racing career using a 2-stick transmitter. At the time, the only inexpensive radios available were sticks. As my driving skills increased, I upgraded my arsenal to include a more expensive, pistol-grip radio because it offered more features and adjustments. I enjoyed my old stick radio, and if one had been offered with high-end features, I might have stayed with sticks. Since making the switch, I've wondered which type of radio was better for me. When I heard that JR Remote Control\* was offering a 2-stick version of its popular R-756 pistol radio specifically for cars and boats, I had to check it out.

### CALL ME STICK-MAN!

The X-756 is a high-end, 2-stick transmitter that uses the "guts" of its pistol-grip cousin, the R-756. When you hold the X-756 for the first time, the feel is that of an expensive Italian steering wheel—a topnotch piece of equipment. It's also very comfortable to use, as your thumbs seem to fall right on the control sticks, and your index fingers naturally land on the secondary control buttons.

The X-756 has two control-stick gimbals: the left one controls the throttle and the brake; the right one, steering. Many believe that stick radios provide more precise control—especially

for the throttle and the brake—than pistol radios. Like pistol radios, stick radios have various knobs and dials with which to control trim settings. The X-756, however, offers so many adjustments that it needs a computer brain to keep track of them.

A large, easy-to-read LCD display and three manual trim knobs for those trims that may need to be adjusted while the car is running are above the sticks.

### BRAIN, BRAIN, WHAT IS BRAIN?

The "brain" can be accessed by six buttons on the transmitter's base. To

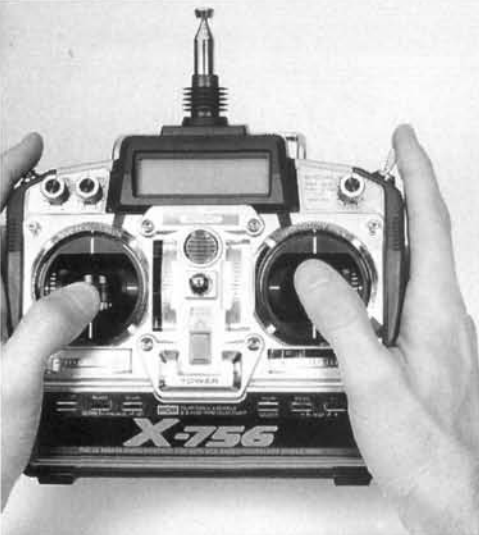
explain how they work, I'll take you through setting the sub-trim of the steering servo.

- One button allows you to enter the Direct mode, in which all trim settings are adjusted.
- The "up" and "down" buttons let you scroll through the X-756's menu of adjustments. To set the sub-trim of the steering servo, use these buttons until the sub-trim screen appears.
- By pressing the "+" or "-" buttons, you can re-center the steering servo to the left or right.



PHOTOS BY WALTER SIDAS





*The X-756 is well-designed. As you can see, with both thumbs on the sticks, you can easily reach all the controls.*

## JR REMOTE CONTROL X-756

### TRANSMITTER

Type: twin stick  
No. of channels: 3  
Transmitting frequency: 75MHz  
Modulation: FM, PPM/PCM selectable\*  
Power requirement: 9.6V DC  
Current drain: 200mAh

### RECEIVER

Model no: 223 (FM), 233 (PCM)  
Receiving frequency: 75MHz  
Power requirement: N/A  
Current drain: N/A  
Dimensions: 1.43x2.06x0.55 in.  
Weight: 1 oz.

List price: \$299.95\*\*

### FEATURES

- Changeable crystals
- Plug-in RF module
- Steering dual-rate adjustment
- Steering end-point adjustment
- Steering exponential (curve)
- Steering sub-trim
- Servo-reversing
- Throttle high-point adjustment
- Throttle brake travel
- Throttle exponential (curve)
- Throttle sub-trim
- Adjustable rate control point
- Throttle hold position
- Direct servo control
- Adjustable stick/wheel tension
- Adjustable throttle/trigger position
- Low-battery warning

\* Must have PCM receiver and transmitter module.

\*\* Price for transmitter only. Available with FM 3-channel receiver for \$409.95 and with PCM receiver for \$439.95.

• The sixth and final button is the "Select" button. With the sub-trim screen showing, pressing this button changes the function from steering sub-trim to throttle sub-trim, which you can set in the same fashion.

Sub-trim is just one of the many trim settings available, but almost every adjustment is set in the same way. Don't feel bad if you don't get this stuff right away; this is a pretty high-zoot radio. Even as I write this, I've got the radio and the instruction manual in hand just to keep my eyes from crossing!

### SECONDARY CONTROLS

In addition to the programming buttons, there are three trim dials, a button and a toggle switch. Two of the dials control trim



*The dial on the right (Grip Dial B) adjusts the other two of the three features—steering travel, steering trim, or brakes—depending on which feature you assigned to Grip Dial A. The toggle switch on top handles the Drive mode, which, basically, allows you to select one of two settings for steering exponential.*



*The dial on the left (Grip Dial A) adjusts the brakes or the steering trim, and the dial on the right (Fun 3) accesses the radio's third channel. The small black button on the top controls the lap-timer, the uptimer, or the throttle preset function.*

functions; you assign each dial a particular function using the System-Setup mode. Dial A, which is positioned at the upper left corner of the radio's case, can be set to control the amount of brake travel or steering trim. Dial B can control the steering's dual-rate adjustment or the steering trim. When you assign the steering trim function to one of the dials, the standard steering trim lever below the control stick becomes inactive.

The X-756's third channel is controlled by the third dial that's just to the

right of Dial A. Used with an appropriate 3-channel receiver, the third channel can control auxiliary servo functions, such as raising or lowering the bed of a monster truck.

A small push-button that protrudes from the radio case right where your left index finger falls controls the X-756's up-timer/lap-counter feature. The lap-counter can count and time up to 75 laps and is activated when the throttle stick is pushed forward. You can also set the lap counter to stop at a predetermined, timed interval, such as four minutes. After your run, you can scroll back through each lap to see how you did. This is invaluable for gauging your car's performance during practice runs.

## Glossary of Radio Lingo

• **Direct servo control (DSC).** With the radio plugged directly into the appropriate receiver, this feature allows you to set up

your radio system without transmitting a signal. It's great for last-minute changes without the risk of interfering with others' radios.

• **End-point adjustment (ATV).** This lets you set the amount of servo travel in both directions indepen-

dently. Most transmitters feature steering ATV, though some high-end units have this adjustment for the throttle channel as well. It's also called brake and throttle high-point travel.

• **Exponential rate (curve).** This adjustment changes the way in which the steering servo, the throttle servo, or

# Sticking with the Stick

The uptimer is simply a counter that begins when you press the button and stops when the button is pressed again. If you choose to forego the timer functions, the button can be set to control throttle preset; when the button is held, the throttle servo or the ESC will move to a preset position (up to 60 degrees forward or reverse).

The X-756 is the only radio that I know of that has dual settings for both throttle and steering exponential. For each model, you can program two throttle and steering curves.

Changing the curve means changing the sensitivity of the throttle or steering around the neutral point. The curves can be changed "on the fly" by flicking the little toggle switch that's positioned on the radio's top right corner.

## TRIM SECURITY

Have you ever turned on your transmitter at a race only to find that someone had messed up all your trims? I've had this happen to me; it stinks! The X-756 offers the ultimate in trim security. If your trim dials are

changed when your

radio is switched off, an alarm will sound when you turn it on. This is accompanied by a visible warning and the "STAB" (Steering, Throttle, Dial A and Dial B) screen. This screen shows not only which

trim settings have been moved, but also how far and in which direction, so you can quickly make the proper corrections.

## MEMORY FOR UP TO SIX MODELS

The X-756 can store trim settings for up to six models. Instead

of having

to purchase five more radio systems, you need only buy additional receivers and servos. A unique feature is that you can label each of the programmed settings to correspond to each model. Up to four characters (letters, symbols and punctuation marks) can be used.

In addition, to allow you to erase a model's settings or make a duplicate copy as a backup, the X-756 offers model-clear and model-copy functions.

## TRACK TESTED

I've been using JR Remote Control's R-756 pistol radio to control my RC10, so to test the X-756, I only had to remove the RF module from the pistol and place it in the back of the stick radio. After I had set the appropriate trims and charged the bat-



The control panel, i.e., the "brain," is at the base of the radio. At the touch of a button, the brain controls most of the radio's functions.

the ESC react to your input. Normally, the reaction of these components is linear (they move in direct proportion to the transmitter's input), but through the use of an exponential adjustment, the reaction time can be increased or decreased, depending on your preference.

• **Servo-reversing.** Almost all

radios have this feature, which allows you to reverse the direction in which your servos or speed controller travel (in case their action doesn't match that of your transmitter). For example, if you move your radio's steering wheel to the right, but the car's wheels travel to the left, the servos must be reversed.

• **Steering dual-rate adjustment.** This controls the amount of travel of the steering servo in left and right directions simultaneously—hence, the term "dual rate."

• **Steering trim-rate adjustment.** Some radios allow you to adjust how far the servo will move in relation to how far you move the trim dial. This allows

you to make fine or large trim adjustments using a standard trim dial.

• **Sub-trim.**

This secondary, "internal" trim setting lets you fine-tune your servo's center point so that it matches your standard trim dial's centered position. Some radios offer this feature for both steering and throttle.

Here are some of the world's top racers who have stuck with the sticks.

• **Masami Hirosaka, KO Propo Esprit II**—"I've been racing with a stick radio for 17 years. When I started to race, Japanese radios only came in stick configuration. Roughly 10 years after I started racing, I tried using a wheel radio, but I felt it wasn't as good as a stick radio. I have more control with a stick radio."



• **Kevin Moore, KO Propo Esprit II**—"I tried a wheel radio, and I found that the reactions on a stick radio were quicker. The hardest thing I found getting used to on a wheel radio was pushing the trigger forward for brakes; to me, it was very awkward."

• **Jamie Booth, Futaba FF3**—"Stick radios are the most popular type radio in England right now. All the top racers use them—Rory Cull, Craig Drescher, Ben Stumam and Kevin Moore. I feel that I have more precise control over my car with a stick radio."





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RC10GT (7066)	\$240.99
MUGEN ATHLETE W/O MOTOR	\$415.99
MUGEN SPORT	\$239.99
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**ON-ROAD KITS**

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REX ULTRA COMP CAR	\$285.99
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**The battery pack fits in the rear and on the bottom of the radio.**

tery, I headed out to the large parking lot behind our company's photo studio to see whether I could still drive sticks.

Negotiating several obstacles, I was surprised at how easy it was to master the twin sticks. It takes a little while to get used to steering using a stick instead of a wheel. The hardest thing was making large-radius turns; I kept moving the stick too far in one direction, and the car would loop. I actually found that it was easier to be smoother using the



**The X-756's removable RF module is located on the back of the radio.**

throttle/brake stick, as it has more range of movement than a pistol radio's trigger. It was also easier to concentrate when driving. I'll confide my deepest secret: I have a habit of scratching my nose when I drive with pistol radios, and I had hoped that by using a stick radio (which is held farther from the face), I would stop scratching! I'm pleased to say that I've broken this nasty habit (not because of the distance, but because the antenna whacked my head every time I attempted to scratch!).

I'm not quite ready to give up pistol radios yet, but the X-756 makes it very tempting. It has all the features anyone could ever need, and in some ways, it made me a smoother driver. I'm sure that, given sufficient practice, I could learn to steer as well with this stick as with a pistol radio. Hey, if stick radios are good enough for Masami....

\*Addresses are listed alphabetically in the Index of Manufacturers on page 153.

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**I F YOU'VE BEEN** thinking about buying a gas car, but are scared by all the technical stuff, take a look at this. The new Kyosho\* Go-Kart has all the nitro-burnin' action you want in an easy-to-build machine; in fact, even if you've never tried an R/C car, you'll have an easy time with the Kyosho Go-Kart.

When designing the Kart, Kyosho simply scaled down a full-size, 100cc racing go-cart. Not only did they make it look like the real thing, but they also made it drive like the real thing. Like the full-size cart, the Kyosho model has no real suspension, just a simple chassis-flex design. Power from the O.S. 10FP engine is delivered to the rear wheels through a chain, without the use of a differential—just like the real thing. To stop the Kart, there's a single disk brake on the rear axle.

b y J O H N H U B E R



# GO-KART

KYOSHO



**Performance à  
la kart!**



To further enhance the Kart's scale appearance, Kyosho has hidden the radio gear. The receiver and throttle servo are mounted in the driver's seat and are only visible from the Kart's rear. The receiver battery and fuel tank are hidden in the side pods, so except for the antenna, the Kart looks totally real. And as if that wasn't enough, the driver moves his head and arms when steering!

### CONSTRUCTION

Compared with other gas vehicles I've built, the Go-Kart was a piece of cake. There are no shocks or suspension arms to deal with, no complicated gearboxes, drive shafts, or diffs to build, and just about



**By adjusting this nut, you can alter the Kart's steering response. You can also flip the front wheels for more steering.**

everything you need comes in one box. Besides the radio system, the only things I added were a fuel filter and two 5x10mm bearings. In fact, painting and trimming the driver take more time than assembling the chassis.

The Go-Kart's drive system is as simple as they get: the clutch bell on the engine drives a gear; this gear is mounted on a shaft that has a sprocket on the opposite end. Another sprocket is mounted on the rear axle, and the two are connected by a small chain. That's it! To alter performance, you can use clutch bells of different sizes, but it's very good the way it is.

The chassis—I guess you could call it a Y-plate chassis—is made of aluminum and has some plastic supports. It's surrounded by a red plastic framework that supports the side pods and front end. I noticed that the front plastic framework has a metal rod inside to strengthen it. The engine and drive system are mounted on a separate aluminum plate that can be slid to adjust chain tension.

# You Might Want To...

**A**lthough the Kart was designed for fun and doesn't need lots of after-market parts, a few are worth looking at.

■ There's a plastic bumper that will help to protect the Kart in a crash. It's inexpensive and will save you money in the long run.

■ It's also worth considering a header for a tuned pipe. It allows you to improve performance by using any 1/10-scale pipe. I tried it with an RJ MK-II pipe and noticed a definite improvement in top speed.

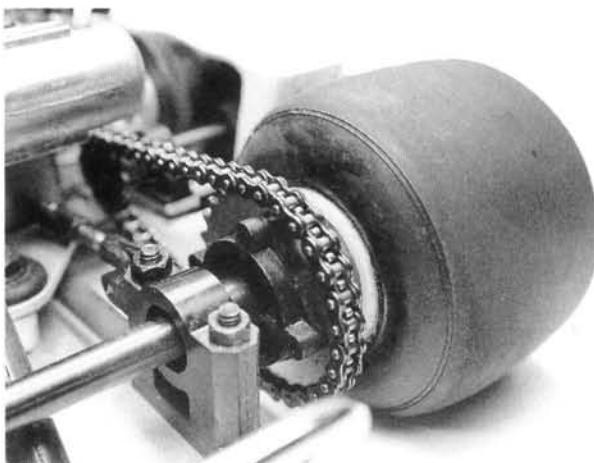
■ You can also add a set of foam racing slicks. I don't see how they could work any better than the stock tires, but they might be the ticket on a particular track.



**The optional front bumper is a good idea. It's strong enough to survive solid contact, yet it's very light.**



**The optional header allows you to mount an optional tuned pipe. With the tuned exhaust system, the Kart gains about 5mph.**



**Power is directed to the rear wheels through this chain. As on the full-size carts, there's no differential.**

The massive, steel, rear axle is supported by two heavy-duty ball bearings. On the right side is the sprocket for the chain drive, and on the left is the brake disk. And this isn't a cheap plastic disk that will melt in a couple of runs; it's made of the good stuff!

The Kart's steering system is very interesting. Instead of the servo being directly connected to the wheels, it's connected to the steering wheel, which is connected to a steering column and the front wheels—

## KYOSHO 1/4-SCALE RACING GO-KART



**SCALE** ..... 1/4

**PRICE** ..... \$349.99

### DIMENSIONS

Overall length ..... 15 in.

Wheelbase ..... 10.2 in.

Front width ..... 10.75 in.

Rear width ..... 12.5 in.

### WEIGHT

Gross (ready to run) ..... 3 lb., 4 oz.

**CHASSIS** ..... Aluminum-plate Y-chassis

### DRIVE TRAIN

Type ..... Gear/chain

Transmission ..... Clutch bell/spur

Differential(s) ..... None

Slipper clutch ..... None

Bearings/bushings ..... Metal bushings

**SUSPENSION** ..... Flex chassis

### WHEELS

Type (f/r) ..... One-piece plastic

Dimensions (DxW)

Front ..... 1.3x1.25

Rear ..... 1.3x2.0

### TIRES

Front/rear ..... Semi-pneumatic

..... with foam inserts

**POWERPLANT** ..... O.S. Max 10FP,

..... stock pipe and carb

**OPTIONS TESTED:** KO\* EX-1 with KO 1001 for steering; Futaba\* S130 for throttle; 4-cell 500mAh receiver pack; Blue Thunder\* 20-percent-nitro fuel.

### Hits

• Fast and fun to drive • Easy to build and deal with • Handles just like the real thing

### Misses

• Decals didn't stick to driver and side pods very well • Should come with a bumper

If you're a beginner who's looking for a gas vehicle, or if you're an advanced modeler who wants something fun but simple, check out the Kyosho Go-Kart. Oh, yeah; it runs for at least 15 minutes on a tankful!

just like the real thing. The driver is moved by a control rod inside his body that's connected to the servo. His arms are flexible, and they snap onto the steering wheel with little ball joints. When you steer the Kart, it looks as if the driver is doing all the work.

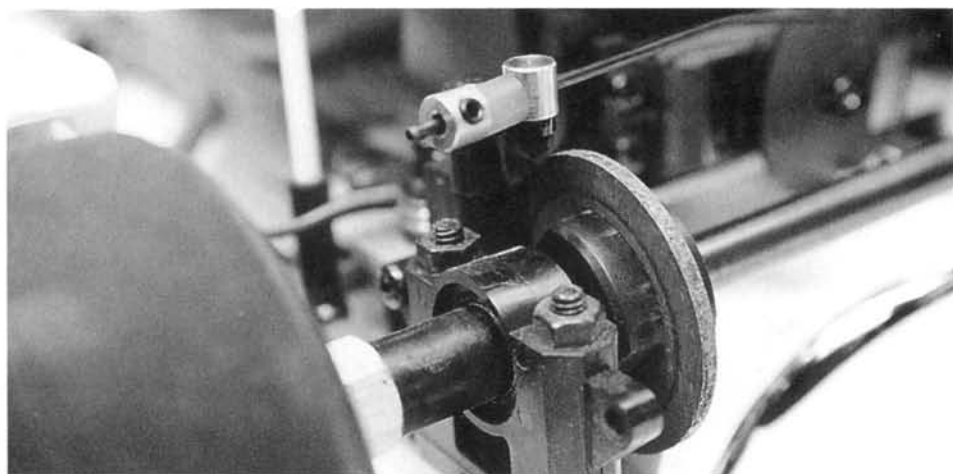
### PERFORMANCE

The Go-Kart's performance is better than you might think. It doesn't have a .12 or .21 engine, but that doesn't mean it won't light up the tires—it will! It's quite fast—about 25mph right out of the box; and it's even a little faster with a tuned pipe. But the faster you go, the hairier it is to drive.

Because the Go-Kart has no suspension,



**The servo is linked to the steering wheel to control direction. Another link is connected to the driver's head and controls side-to-side head-moving action.**



**A disk brake stops the Kart with authority. I was pleased to find the disk is made of durable, good-quality material.**

it can be a little twitchy. If the surface isn't smooth, it tends to hop around a bit, and it can change direction very quickly. Generally speaking, the smoother the running surface, the better.

The Go-Kart's tires are great—semi-pneumatic rubber with foam inserts. This means that they're squishy enough to give good traction, but firm enough to hold their shape. They grip the pavement well and seem to wear very little.





Because there's no diff, the Kart doesn't turn like the cars I'm used to. Throttle technique has a lot to do with steering. At very slow speeds, its turning radius is pretty small, but this gets bigger the faster you go. If you get the Kart up to speed, cut the throttle and throw it into a turn, it will bite hard and make a tight turn, but will lose speed. It just doesn't roll through a turn the way a car with a differential does. Using a little throttle, you can prevent it from losing speed, but your turning won't be as sharp.

You can do a couple of things to get the car dialed: increase or decrease steering response to suit your needs by adjusting a nut on the chassis; increase steering response by reversing the front wheels. All in all, it's better to have the Kart understeering than oversteering and spinning out.

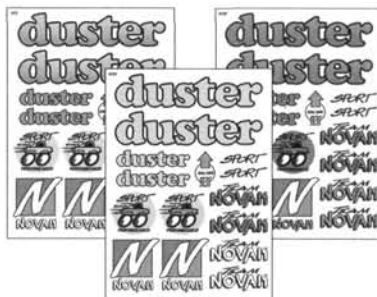
## ENGINE

All I can say about the engine is that it works great! It may not have a super-cool heat-sink head, but it's so easy to operate. The carb has only a high-end needle, so a beginner won't be too overwhelmed. I simply started running it with the needle three turns out. After four tanks, I turned the needle in a little until the engine began to really zip. The engine runs nice and cool because it's 100-percent exposed to air flow. There's no need for a super-cool heat-sink head!

If you're a beginner who's looking for a gas vehicle, or if you're an advanced modeler who wants something fun but simple, check out the Kyosho Go-Kart. Oh, yeah; it runs for at least 15 minutes on a tankful!

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# Team NOVAK TEAM SECRETS NEW STUFF



## DUSTER DECALS

Hot new Duster Sport ESC™ decal sheets are now available from Team Novak. The 12 sheet assortment includes three different Duster decals in bright fluorescent colors, plus a selection of eight Team Novak "N" logo sheets. Printed on high gloss mylar, these decals look great. The new Duster Assortment (#7078) is available from your local hobby dealer at a retail price of just \$10.00.



## MICRO-FIN HEAT SINKS

Team Novak's high performance Micro-Fin™ heat sinks are now available. These bright purple anodized heat sinks provide more surface area, plus a larger contact patch on the FETs for improved cooling and higher efficiency. The set includes one large heat sink (10 fin), and one small heat sink (6 fin) to fit all Novak ESCs that have 5 forward FETs and 3 FETs on the brake side. See your local hobby dealer for the Micro-Fin Heat Sink Set (#5403) at a retail price of \$14.00.

*Team Novak welcomes your comments and secrets!*

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# TRINITY®

## WHICH IS THE BEST BRUSH TO RUN? and WHAT ABOUT THE SERRATED-FACE RACE BRUSH?!

That first one is not an easy question to answer because there are so many variables to cope with. What I can do, however, is try to give you a good starting point and let you take it from there.

There are many considerations to contend with here. The scale of racing. The type of racing. The type of track. The number of cells. The kind of cells. The kind of tires. The way you drive. These are all important things to think about when you select a brush and a spring to go with it.

Low-silver brushes, such as our 4038/4065/4380/4386/4463, tend to work better for high-current applications such as off-road, 1/10 on-road and 7-cell dirt oval. High-silver brushes, such as our 4455/4460/4381/4383, make more immediate power and work better with more constant, lower current loads, such as oval or 1/12 on-road.

Serrated-face brushes, such as our 4380/4383, break in very quickly and make lots of power. I haven't found an application that they don't work well with. In stock motors, they work especially well. The serrated face breaks in to a full arc almost instantly. As the brush breaks in further, the grooves wear down and the new brush surface consistently rides on the new comm surface until the brush is fully worn in. Getting that full arc is what's really important in making good horsepower in a stock motor. Try them, and you'll see what I mean!

You might also want to try our new 4386 brush. It's great for off-road and 1/10 on-road racing. It offers good power and long life, and it's great for when you don't want to be tearing your motor out every run or so.

I have some more tips, but they'll have to wait until next month. So long for now....

	Serrated	Lay-Down
Low AG	4380	4463
High AG	4383	4381
	Full-Face Double-Shunt	Full-Face Single-Shunt
Low AG	4038	4065/4686
High AG	4455	4460

Until next month,  
Neal

Have fun and good racing!  
—TRINITY—

# Gearing to Win

## Understanding the basics

BY JACK JOHNSON

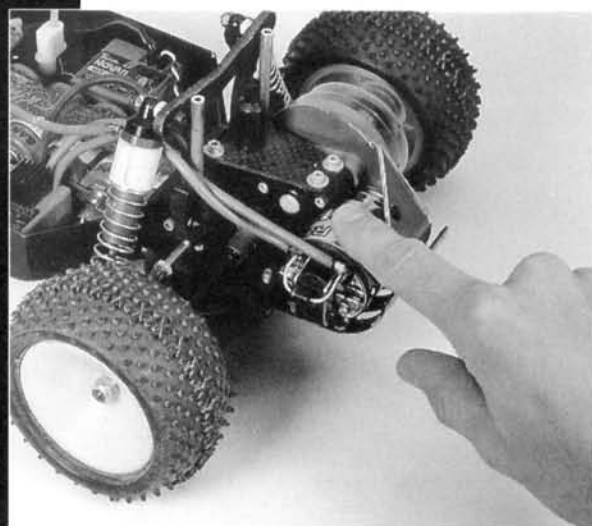


To figure out proper gearing, you must know your transmission's internal reduction. This transmission has the information (2.19:1) displayed on the side of its gearbox case.

THESE DAYS, THERE are almost as many different stock motors as there are cars and trucks. These motors require different gearing; and the same motor might require different gearing in a different car or truck. Before you can fully understand how to gear your stock motor, you need a better understanding of what exactly "gearing" means. It's also important that you know what to look for when you gear a new motor. If you use the wrong gear, you can shorten the life of your motor and decrease its performance.



Here are two examples of improper gearing. The setup on the left is a prime example of overgearing, whereas the one on the right displays undergearing.



By touching your motor after you've run your car, you can determine whether your car is overgearing or undergearing. If the motor is too hot to touch, it's overgearing; if it's cool, then it's undergearing.

### WHAT EXACTLY IS A GEAR RATIO?

You first need to understand the information required for gearing your motor. I always hear people ask, "What pinion gear are you using on your car?" Then they run over and put the same pinion gear on their car, even though they might not have the same type of car. With so many types of cars and trucks available, it's necessary to look at the final drive ratio instead of the pinion/spur ratio. If the same final drive ratio is used, the gearing for a particular car or truck can be duplicated on a different type of car.

To figure the final drive ratio, you must know two things. First, find out the internal reduction on the transmission of your car or truck. This information is usually in the instruction manual or on the side of the box. If you can't find it, contact your local hobby shop; they can probably help.

The second thing you need to know is the pinion/spur ratio. You can figure this out with a calculator, or the old-fashioned way, with a piece of paper and a pencil. Just divide the spur-gear size by the pinion-gear size. For example: if you have a 90-tooth spur gear and a 20-tooth pinion, divide 90 by 20 to calculate the pinion/spur ratio ( $90 \div 20 = 4.5$ )—4.5 is the pinion/spur ratio.

To calculate the final drive ratio, multiply the pinion/spur ratio by the internal transmission ratio. For example: if the internal transmission ratio of your car or truck is 2.5:1, multiply 2.5 by 4.5 ( $2.5 \times 4.5 = 11.25$ ). This means that the final drive ratio of a car or truck with a transmission ratio of 2.5:1 that has a 20-tooth pinion and a 90-tooth spur gear is 11.25:1. This is the number you should use when you refer to other people's gearing as well as to your own. This number is much easier to work with in the long run, because the same final gear ratio

PHOTOS BY WALTER SIDAS



# Glossary of Gearing Terms

**FINAL DRIVE RATIO:** the rate at which the motor turns in relation to the rate at which the wheels turn. Figured by multiplying the pinion/spur ratio by the internal transmission ratio.

**GEAR UP:** to go to a larger pinion or a smaller spur gear; results in a lower final drive ratio (smaller number).

**GEAR DOWN:** the opposite of gear up. The result is a higher final drive ratio (larger number).

**INTERNAL TRANSMISSION RATIO:** the ratio from the top shaft to the output of the transmission. This can be very tricky to figure out; it's best to refer to the instruction manual or ask a hobby shop. This ratio is necessary to figure out the final drive ratio.

**OVERGEARED:** the motor has a final drive ratio that's too low; a pinion that's too large and/or a spur gear that's too small.

**PINION/SPUR RATIO:** the ratio of pinion-gear size (number of teeth) to that of the spur gear. Calculated by dividing the spur gear by the pinion gear.

**PUNCH:** refers to the amount of bottom end, or acceleration, a car or truck has out of a corner or from a stop.

**TIMING:** the number of degrees that the endbell is rotated in relation to the magnetic field. Usually used when referring to types of stock motor.

**TOP END:** the straightaway speed of a vehicle.

**TURNS (on a motor):** the number of winds or turns on a motor. Generally used in determining which type of modified motor you have. Motors with fewer turns have more rpm, but less torque, than higher-turn motors.

**UNDERGEARED:** the motor has a final drive ratio that's too high; a pinion that's too small and/or a spur gear that's too large.

can be achieved by many different combinations of pinions and spurs. It's also better for fine-tuning the gearing of a motor when you get into racing.

This formula can be used in

reverse as well. Say your fellow racer is using the same motor as you are. He has a truck with a 2.25:1 gear ratio, and you have a truck with a 2.6:1 gear ratio. If he tells you that he has a 24 pinion

Motor Type	Gearing	
	BUGGIES	TRUCKS
24-degree stock	7.66:1	9.98:1
36-degree stock	8.00:1	10.40:1
45-degree stock	8.36:1	10.93:1
19-turn modified	7.08:1	9.18:1
18-turn modified	7.35:1	9.57:1
17-turn modified	7.67:1	9.98:1
16-turn modified	8.10:1	10.44:1
15-turn modified	8.60:1	10.94:1

and a 90 spur, you can't gear your truck with a 24/90 and get the same results. If, on the other hand, he tells you that he's using an 8.48:1 final drive ratio, you can get the same gearing. First divide 8.48 by your transmission's internal gearing ( $8.48 \div 2.6 = 3.26$ ). This tells you that you need to achieve a 3.26:1 pinion/spur ratio. Now divide your spur-gear size by the calculated ratio ( $90 \div 3.26 = 27.6$ ), and round the number off. This means that you must run a 28 pinion and a 90 spur to have the same gearing as your fellow racer. Now you can see why the final drive ratio is important. If you had used the same pinion and spur gear, you would have been four teeth undergeared.

## SO WHERE DO I START?

Before you can determine the best way to gear your motor initially, you need to know what kind of a motor it is. If it's a stock motor, you need to know if it's a 24-degree, 36-degree, or 45-degree stock motor. If it's a modified motor, you need to know how

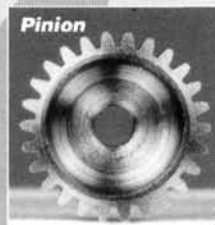
many turns it is, e.g., 14 triple, 12 double, 17 quad, etc. The number of turns is really more important than knowing if it's a double, triple, etc. As long as you know it's a 14-turn, 17-turn, etc., you can get pretty close on the initial gearing.

You should always start conservatively, especially on stock motors. Some stock motors have more torque, and some have more rpm. If you overgear a stock motor that has high rpm but low torque, you could damage your motor.

The best way to tell whether the motor is geared correctly is by noting its temperature after running and its performance on the track. Try not to run a stock motor for more than 5 minutes or so. Running it longer than this will just overheat it and shorten its life. After you've run your car or truck for 5 minutes, feel the motor. You should be able to hold your fingers on it for at least 5 seconds. If you can't, the motor is overgeared. If the motor is still cool, it's undergeared.

Performance should also be considered. If you have good straightaway speed but no punch, gear the motor down a tooth, and try it again. If you have good punch, but the car or truck doesn't accelerate at least one third of the way down the straight, try gearing the motor up a tooth. Stock motors vary quite a bit, so it's best to experiment with the gearing on new motors, but remember that it's better to start slightly undergeared than overgeared. Always remember that trucks must be geared differently from buggies, because trucks have much bigger tires.

The table is a suggested starting point for gearing motors. The suggested final drive ratios are a bit on the conservative side so that you don't run out and overgear your motor right away. I suggest that you start with these drive ratios, and then, if you think that you need to gear up, do so gradually. ■



**Pinion/  
spur  
ratio**

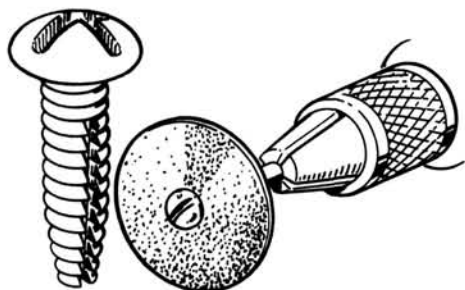
**Pinion  
ratio X**



**Final  
drive  
ratio**

# PIT TIPS

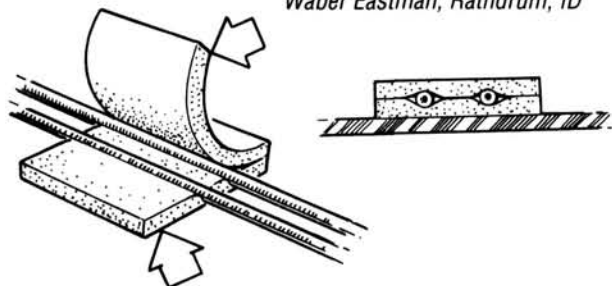
by JIM NEWMAN



## HOMEMADE TAP

This homemade tap works almost as well as a professional one. File the end (last four or five threads) of a screw of the appropriate size to a taper, then, with a Dremel grinding disk, cut a slot along opposite sides of the screw (always wear appropriate eye protection). Use the screw to cut threads of the required size in plastic and soft metals; the slots will effectively clear away the swarf (shavings). Use a 4-40 screw for 4-40 threads, 6-32 for 6-32 threads, etc.

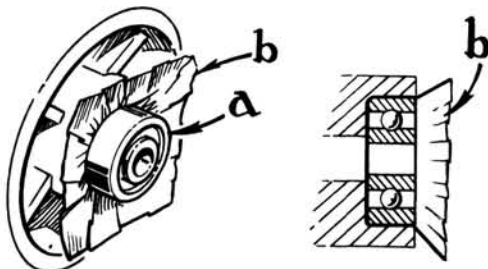
Waber Eastman, Rathdrum, ID



## WIRE HOLD-DOWNS

Instead of allowing wires to trail untidily, hold them between two pieces of double-stick servo tape that's stuck to the chassis wherever convenient.

Steve Downs, Gilbert, AZ



## FRONT-BEARING FIX

If the front wheel bearing (a) fits loosely, it will drop out when the wheels are removed. To avoid this, before you press the bearing into place, put a small square of tissue (b) behind it. When it's fully in the recess, trim off the excess tissue, and punch through the center hole with a dowel. The bearing will now stay put.

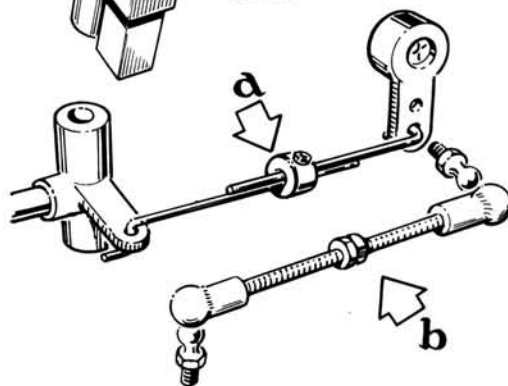
Jagatjit Dhillon, Saskatoon, Saskatchewan, Canada



## SECURE PLUG PINS

Check that the pins are firmly crimped onto the wires, then inject "hot-melt" glue into the end of the plug. This will grip the wires securely, minimize the strain on the strands and keep dirt out of the connectors.

Filip Dadic, Brantford, Ontario, Canada



## PRECISION ROD ADJUSTER

Scrap the crude wire rods and clamping collar (a), and try this instead. Buy 2-56 threaded rod from a hardware store, screw on one or two nuts in the middle, securing them with a drop of CA, then screw a ball joint onto both ends. Fit the ball joints into the original holes on the steering arms and servo arm, and when you want to adjust the steering rod's length, hold the nuts in the center of the rod and turn the ball joints.

Marco Santamaria, Santa Cruz de Tenerife, Spain



## WATER-RESISTANT RECEIVER

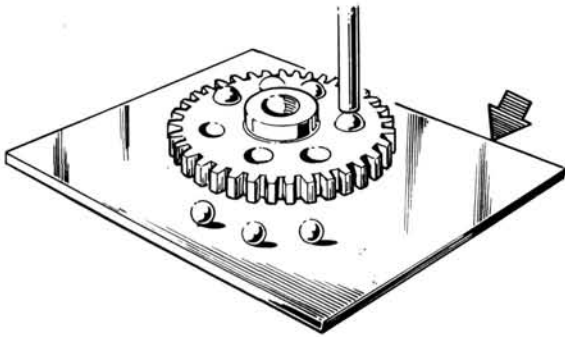
To protect your receiver from moisture, try this: put a thin wad of paper towel on the top and bottom of your receiver, then wrap aluminum foil or plastic wrap (b) around it, as shown. If water gets past the outer wrap, it will be absorbed by the paper towel. Remember that this protection isn't waterproof; it will protect your receiver against splashes, not submersion!

Niki Nadoban, Bronx, NY

(Continued on page 78)

PLEASE NOTE: be sure to print your name and full address clearly on every letter and sketch you send to "Pit Tips." We can't publish many good tips because we don't have the senders' names or addresses.

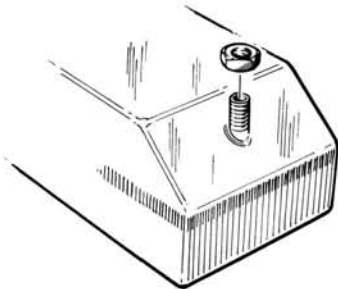




### CAPTURED DIFF BALLS

When using a dowel to press out diff balls, do it over a square of Radio Shack magnetic sheet. When the diff balls hit the sheet, they'll be held firmly until picked off.

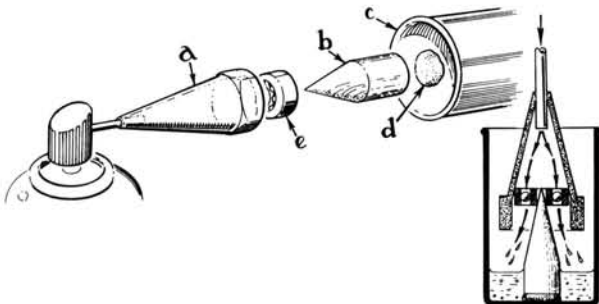
*Stuart Peak, Oshawa, Ontario, Canada*



### PRESSURE-LINE FIX

This tip will help you to prevent the pressure line from being blown off your racer's gas tank. Thread a nut of a suitable size down the nipple so that it cuts threads; then remove the nut and replace the pressure line. You'll find that the threads will give it the grip it needs to stay in place.

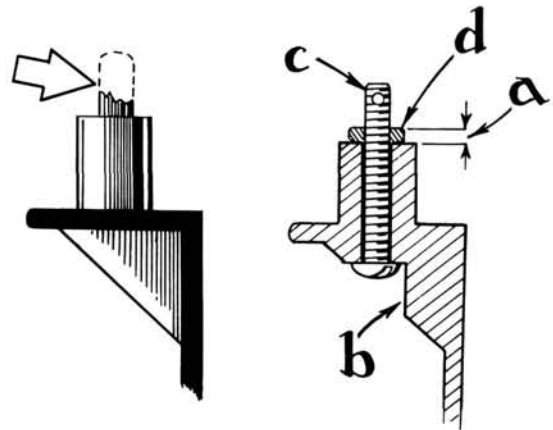
*Mike Mavrikakis, Hauppauge, NY*



### BEARING BLASTER

Jam a glue-bottle nozzle or an RTV needle nozzle (a) onto a motor-spray can as shown, then epoxy (d) a sharpened 1 1/2-inch piece of 3/8-inch-diameter dowel (b) to the inside bottom of a 35mm film canister (c). Impale a bearing (e) on the dowel, then force the nozzle over the bearing so that the motor spray is forced through the bearing. To ensure that all the dirt is dislodged from the bearing, rotate the film canister as you spray. Run the cleaning liquid through a coffee filter, save it in a glass jar, and use it later for "dip cleaning".

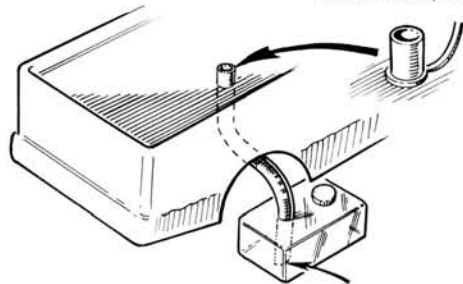
*Dan Goertzen, Echo Bay, Ontario, Canada*



### MONSTER BEETLE BODY-MOUNT REPAIR

File off the stub of the broken mounting post until it's as thick as the nut (a) you intend to use. File a notch in the mount's web (b), then drill a hole up through the post to fit an 8-32 screw (c). Before you install the screw, drill a hole through it for the body-retainer pin. Secure the screw with the nut (d) and Loctite or CA.

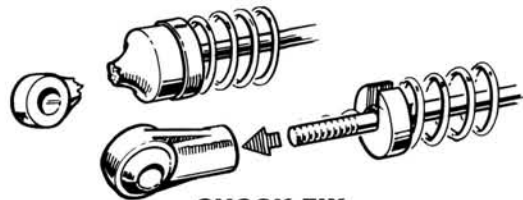
*Jason Steih, Riga, MI*



### EASY TRUCK FUELING

Instead of removing the body to refuel your gas-powered truck, pierce a hole in the body and in the top of the fuel tank, and force a length of wide plastic tube tightly through the holes. Cut the tank end of the tube at a slight angle so that it doesn't fit flush against the bottom and prevent the fuel from flowing. The tube goes up through a hole in the truck bed and is sealed by a captive plug taken off an old glue bottle.

*Jeremy Goodson, Ord, NE*



### SHOCK FIX

Buying new shocks can be expensive, and many companies don't offer after-market spares. To save money, try this: discard the broken end of the shock and use a regular threaded, nylon tie-rod end instead. Grip the rod with padded pliers and carefully screw the rod end onto it. The rod end will cut its own threads as you turn it.

*Mark Gibbons, Beardstown, IL*

Radio Control Car Action will give a six-month subscription (or six-month renewal if you already subscribe) for each idea used in "Pit Tips." Send a rough sketch to Jim Newman, c/o Radio Control Car Action, 251 Danbury Rd., Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.

NEW  
**motor  
TECH**



PHOTOS BY WALTER SIDAS

# REEDY **Sonic Modified Motors**

by FRANK MASI

## Hedgehog Horsepower!

**M**ODIFIED MOTORS have notoriously short lives when run in strenuous, off-road conditions; heavy current loads, dirt, grime and excessive heat make frequent cleaning, rebuilding and re-tuning of the commutator essential. To combat this shortcoming, World Championship-winning motor builder Mike Reedy sought to design a modified motor that could keep its cool under the harshest conditions. A cool motor maintains its power throughout an entire race, and it's less likely to suffer from brush burnout. After months of testing, Reedy emerged from his lab with the latest motor to bear the Reedy Modified\* name—the Sonic.



*After roughly 15 runs on this Sonic motor, I pulled the endbell off to inspect the comm. It's looking pretty good.*





The Sonic motors were designed primarily for off-road duty, though they have proven to work well in most high-

**The new Sonic motor's armature (right) features a larger-diameter commutator that provides more contact area for the motor brush. More contact area means more efficiency. Also, note the aluminum cooling fins on top of the Sonic's armature rotor.**

current-load situations, such as  $\frac{1}{10}$ -scale, 4-minute on-road. When asked whether Sonic motors would replace the current Mr. Series, Reedy was quick to point out that Team Associated/Reedy drivers still use the Mr. Series motors in  $\frac{1}{12}$ -scale and superspeedway racing because of their capability to achieve high rpm.

## INNOVATIVE IMPROVEMENTS

• **Armature.** The biggest difference between conventional motors and the Sonic is in the armature. A larger-diameter commutator is used on the Sonic to provide more contact surface area for the motor brush. More contact area means more efficiency. To preserve the same ratio of brush/comm contact area in his Mr. Series motors, Reedy adapted horizontally mounted motor brushes to the Sonic's black, fiberglass-filled-nylon endbell. A side benefit is that this setup proved to be slightly more efficient and

resulted in cooler running and more torque. On the downside, rpm are slightly diminished—the reason Reedy recommends the Mr. Series when high rpm are needed.

• **Cooling vanes.** To stay even cooler, the Sonic's armature features innovative, aluminum cooling vanes. When the motor runs, these draw fresh, cool air through the brush hoods, down past the brushes and the commutator. Warm air is expelled by the vanes through small openings in the motor's can. To demonstrate this design for a skeptical Cliff Lett (Associated's chief car designer), Reedy held a candle's flame to the brush hood of a conventional Mr. Series motor. While it ran, the flame danced around a bit, but that's all. When

the same test was done on the Sonic, the flame was actually sucked into the motor! • **Can.** The thickness of the Sonic's can is right at the legal limit—36.02mm—to make the most of the magnet's strength. Reedy claims that, though the magnets used in racing motors have been improved substantially, much of this increased strength actually "leaked" out of the thinner cans.

## SUPER SONIC

I tested Sonic motors in an RC10 that I raced at two local tracks—R/C Madness in Enfield, CT, and the East Coast Barn Stormers in Chester, NY—and they provided consistent power during the entire 4 minutes.

Reedy explained that, as a motor heats up, its magnetic field weakens, and horsepower declines. This power loss can be quite misleading; you might blame it on your battery! Actually, heat is robbing

your motor of its power. Obviously, a cooler-running motor is less susceptible to power loss and, thus, will finish

a race with more power.

Generally, motors that keep their cool will last longer between rebuilds. Reedy claims that his off-road team drivers get more run time with their Sonic motors before they have to re-true the commutators—usually done after about three or four race nights on the club level, or after every 10 runs in bigger events.

## BRUSHES AND TUNING TIPS

Here are some speed secrets I was able to pry out of Reedy:

When running off-road, always use a brush that has a lot of lubricant. These brushes strike the best overall balance between performance and motor longevity; with more lubricant, they're easier on your comm's surface.

To increase power, try reducing the



**Reedy's new Sonic motor is equipped with horizontally mounted brushes. This setup provides more torque and allows the motor to run cooler and more efficiently.**

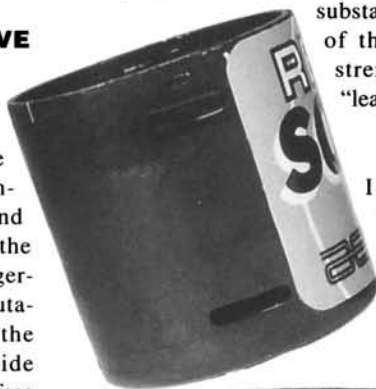
brush-spring tension on the motor's negative side and increasing the tension on the positive side. Reedy claims that this trick raises the motor's amp draw slightly, allowing it to create more power.

## AVAILABLE WINDS

The Sonic line of motors is available in all the same winds as the Mr. Series, although the wire size may vary (because the Sonic armatures are a little more difficult to wind). Reedy also offers a full line of replacement brushes designed specially for the Sonic's horizontal-brush configuration.

Overall, I was very pleased with the Sonic's performance. In two weeks, I put about 15 runs on two motors, and their commutators still appear to be in good shape. Check 'em out!

\*Addresses are listed alphabetically in the Index of Manufacturers on page 153.



**The new Sonic can (above) comes with two cooling vents, whereas the Mr. Series can (right) does not.**



NEW  
motor  
TECH

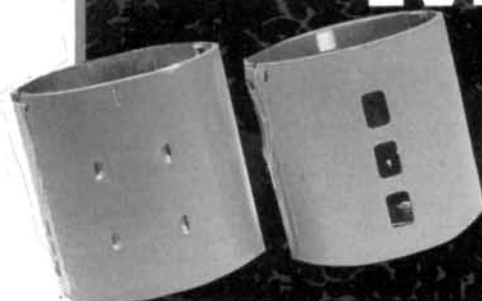


Souped  
-up  
sequel

TRINITY

# Green Machine 2

by John Howell



*The Green Machine 2's can (right) is vented to provide better cooling, whereas the original Green Machine uses a fully enclosed can design.*

**R**ECENTLY, TRINITY<sup>®</sup> unveiled the Green Machine 2 (GM2)—a new stock motor that the company claims will redefine the way people look at stock-motor technology. A bold statement indeed! The GM2 is a completely new motor—not just an updated version of its predecessor. A lot of time and research have gone into its development. At a quick glance, it may look like the original Green Machine, but after a thorough inspection, you'll find that it's a completely different animal.

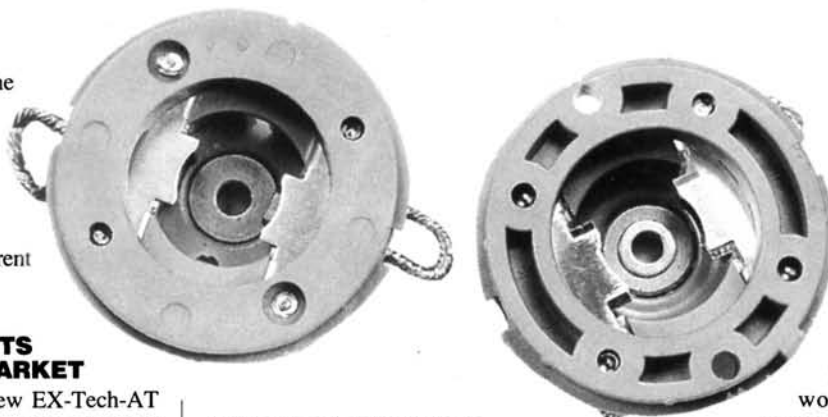


Besides the green paint, the only thing this motor shares with the original is its 27-turn, 24-degree timing and 22-gauge wire. Let's take a look at what makes this current breed of machine so hot.

### EX-TECH HITS THE STOCK MARKET

The GM2 uses Trinity's new EX-Tech-AT (advanced technology) that's also being used in Trinity's modified motors. So, what is EX-Tech-AT and how does it benefit this stock motor?

- **Can.** A three-hole can that comes with the same magnets as those found in Trinity's EX-Tech modified motors is one of the GM2's key features. The magnets in the new can are much stronger and are more resistant to being demagnetized. Trinity's in-house tests have shown that these magnets are



As you can see, the Green Machine 2's endbell (right) has less material incorporated in its design; this makes it slightly lighter than its predecessor's endbell.

and gives you more punch—the best of both worlds. Plus, it runs cooler

thanks to its new endbell design, tri-rotor armature and vented can. Heat can weaken a magnetic field, so because this motor runs cooler, its power output stays consistent throughout its run time.

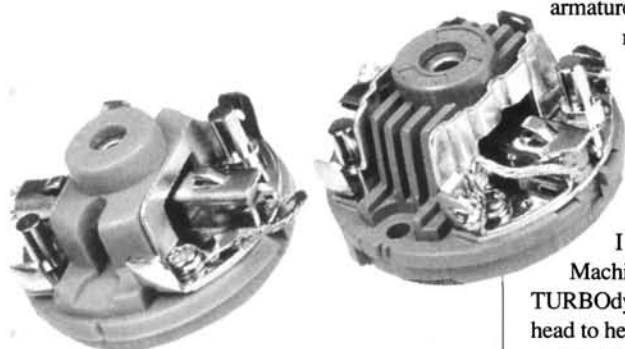
tension brush springs have also been installed. According to Trinity, you shouldn't have to replace them unless they're lost or damaged. Also, Trinity has designed this motor so you can take it out of the box, put it in your car and go. That means a capacitor has been soldered on for you—nice touch.

- **Armature.** The GM2 is the first-ever stock motor to use a tri-rotor armature. All other Trinity stock motors come with dual-rotor armatures. Every other stock motor on the market comes equipped with a full rotor armature. Basically, the tri-rotor armature places more of the armature's stack in the can's magnetic field.

### PERFORMANCE

I tested a GM2 and a Green Machine on a Competition Electronics\* TURBOdyno so that I could watch them go head to head.

You can see from the dyno charts that, at the same 5 volts and at the same series of torque readings, the GM2 turned consistently higher rpm, put out more watts (horsepower!) and had a slightly higher efficiency rating while drawing nearly the same number of amps as the original Green Machine. With the GM2, you get a motor that spins faster



Another cool feature (no pun intended) of the Green Machine 2's endbell (left) is its specially designed cooling fins. The endbell is also equipped with Trinity's lay-down brush system and comes with the brush shunts soldered directly onto the brush hoods.

considerably better than what's typically found in stock motors. The can's three holes keep the GM2 running cool. The original Green Machine's can wasn't vented.

- **Endbell.** A new endbell (based on Trinity's new Kinwald Series modified motor) has been molded with less plastic on the inside, and this makes it slightly lighter. The endbell is also equipped with special UniFlow heat sinks, which also help the motor run cooler.

The LayDown brush system has been incorporated in the endbell's design. According to Trinity, this system provides more power in a stock motor because the firing period is much longer, and it increases rpm and overall power.

The motor comes with silver brushes that are soldered directly to the brush hoods. All-new, high-temperature-resistant and high-



The heart of the Green Machine 2 is its new tri-rotor armature (top), which provides more material throughout the motor's magnetic field, more overall power and higher rpm.

The GM2 is at home on an off-road track, but after talking to Trinity's head motor guru, Neal McCurdy, I was informed that this might also be the hot ticket for stock oval and roadcourse racing. A reverse-rotation GM2 is available for those who run



Included with the Green Machine 2 is a set of Trinity's new BlackTek motor springs (right). They're slightly stiffer than the original Green Machine's springs (left).

left-side-drive superspeedway cars and for those who want to run a set in their dual-motor monster trucks. Trinity has upped the stakes in the stock-motor wars; as it stands now, the GM2 is the motor to beat.

\*Addresses are listed alphabetically in the Index of Manufacturers on page 153.

GREEN MACHINE				
Rpm	Torque	Watt	EF	Amps
13,527	1.4	14	53	5.3
12,206	3.5	31	65	9.4
11,289	5.0	41	65	12.6
10,358	6.5	49	62	15.6
9,319	8.0	55	58	18.9
8,242	9.5	58	52	22.1

GREEN MACHINE 2				
Rpm	Torque	Watt	EF	Amps
14,390	1.4	15	55	5.4
13,020	3.5	33	67	9.9
12,016	5.0	44	66	13.2
11,143	6.5	53	64	16.5
10,157	8.0	60	60	19.8
9,087	9.5	64	55	23.2







Team Losi tries to splash the competition with a wave.

# TEAM LOSI, R/C CAR ACTION & 1994 FLORIDA

by RICK SCHWARTZ

**L**OVE THIS place! But who can blame me? For an off-road R/C racer, it's heaven. It has a new drivers' stand, an enlarged track, racers and manufacturers from nine countries and 400 fellow off-road enthusiasts. It's one of the country's most well-

organized events,

and the world's top drivers participate in it. It's the—drum roll, please—1994 Winter Championships in Tampa, FL.

Hosting the event for the eighth consecutive year, the West Coast R/C Club rolled out the red carpet to make







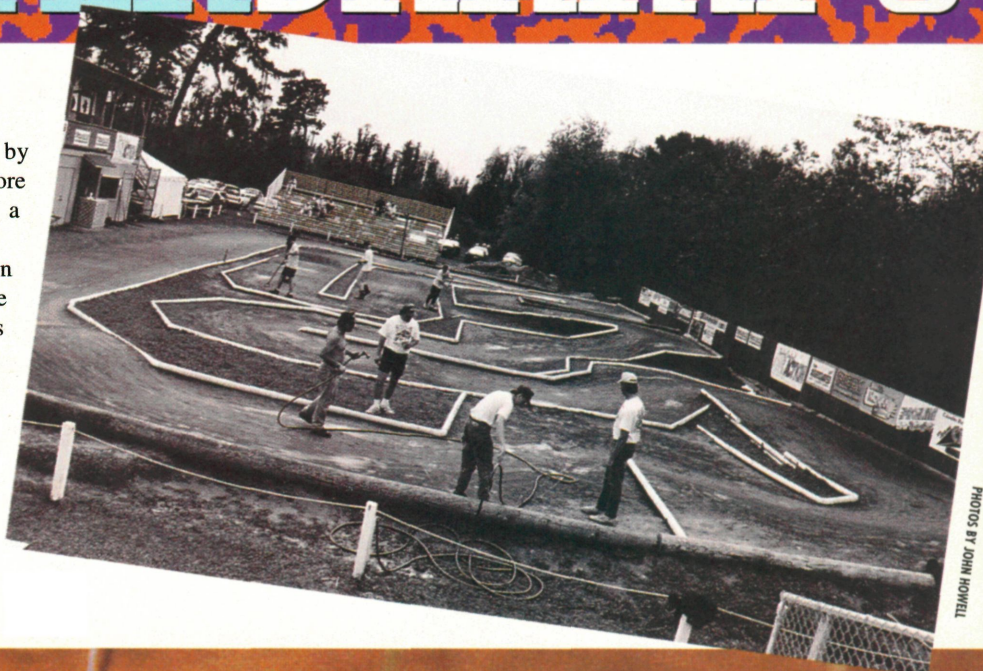
Winnin' in a  
winter  
wonderland

THE WEST COAST R/C CLUB PRESENT

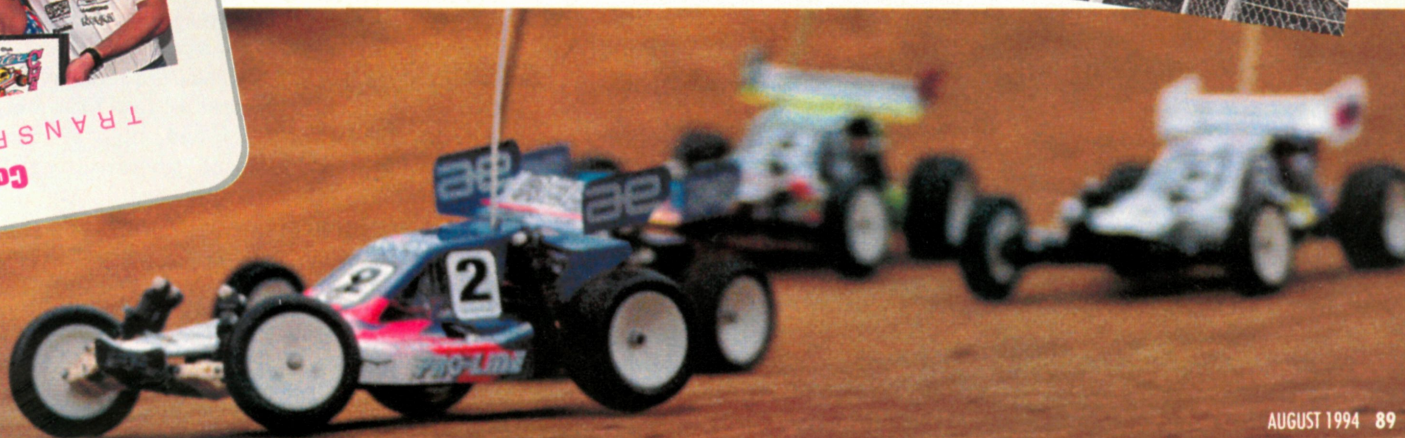
# WINTER CHAMPS

all attendees feel at home. Sponsored by Team Losi and Car Action, it seemed more like an international festival than a competition.

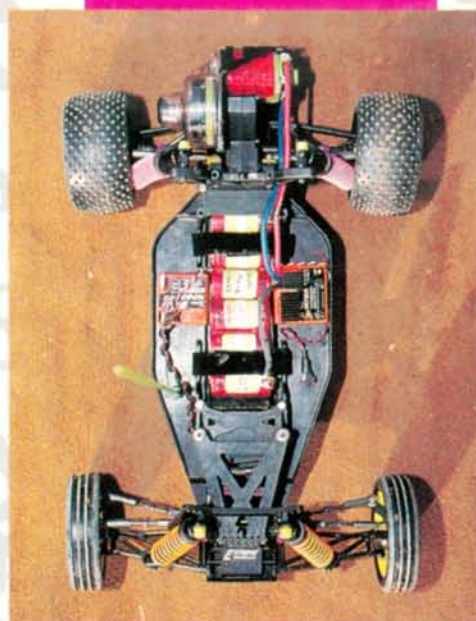
Although the racers started arriving on Tuesday for practice, the first official event was the tech seminar held on Thursday night. It allowed the drivers to pick the brains of the top names in R/C racing. You can't teach an old dog new tricks? Wrong!



PHOTOS BY JOHN HOWELL



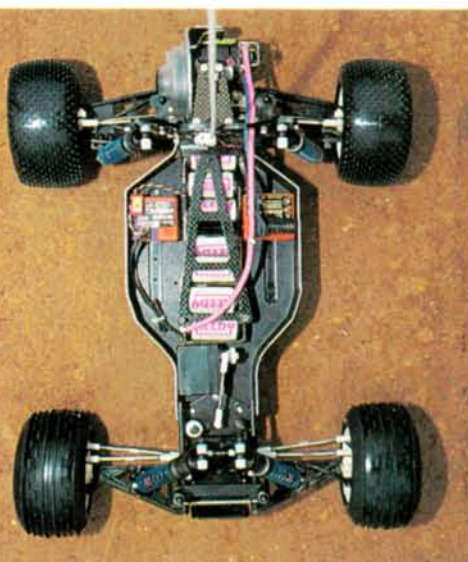




2WD Modified winner Masami Hirosaka and his Associated RC10.



2WD Stock winner Jay Robinette and his Losi Double-X.



Truck Modified winner Mark Pavidis and his Associated RC10T.



4WD Modified winner Masami Hirosaka and his Yokomo YZ-10.

Even world champion Masami Hirosaka listened intently to the presentations to pick up some pointers.

### THE FUN BEGINS

The qualifiers were run on Friday and Saturday; each driver had three chances to make it to the A-Main. That translates into 120 heats to determine who were the 10 best in each class. The heats went nonstop until about 6 p.m. on Saturday. The competition was fierce in all the classes, but it was especially hot in 2WD Modified.

The top 10 drivers all had nine laps. The next seven drivers all had eight laps with times ranging from 4:00.080 to 4:00.670. Less than a second separated those drivers from a ninth lap and a chance at the A-Main.

As the dust settled and the final times were posted, sighs of relief and groans of disgust were heard. Masami Hirosaka pulled a double TQ with a nine-lap 4:14.560 in 4WD and a nine-lap 4:23.350 in 2WD Modified. Mark Pavidis was the class of



# FLORIDA WINTER CHAMPIONSHIPS

## 4WD MODIFIED

POS.	DRIVER	CHASSIS/BODY	RADIO/ESC	MOTOR	TIRES (F/R)
1	MASAMI HIROSAKA	YOKOMO YZ-10	KO ESPRIT II/NOVAK 410 HPC	REEDY SONIC	PRO-LINE FLAT FUZZIES
2	JURGEN LAUTENBACH	YOKOMO YZ-10	KO EX 1/LRP LE25AMS MKIII	LRP BEE D	PRO-LINE 8135/83
3	EIRIK ANDREASSEN	YOKOMO/WORKS 93	SANWA/NOVAK	PEAK PERFORMANCE	LOSI
4	B.J. CHRISTENSEN	YOKOMO YZ-10	AIRTRONICS/NOVAK	REEDY	PRO-LINE
5	JAMES BROWN	YOKOMO YZ-10	AIRTRONICS/TEKIN	PEAK PERFORMANCE	LOSI
6	NIKLAS HÅKANSSON	YZ-10/PROTECH 4	KO PROPO	EXTREME MOTORSPORT	LOSI GOLD STUD
7	KRIS MOORE	KYOSHO LAZER	KO EX-1/NOVAK	TWISTER 10T	LOSI
8	LARS NORDIN	YZ-10/PROTECH 4	KO PROPO/NOVAK	REEDY	PRO-LINE FUZZIES
9	EUSTACE MOORE	YOKOMO YZ-10	AIRTRONICS/NOVAK	—	PRO-LINE
10	RICHMOND ROGERS	TENTH TECH. PREDATOR XT	KO PROPO/NOVAK HPC	PARMA TEAM SPEC	LOSI IFMAR STUD

## 2WD MODIFIED

POS.	DRIVER	CHASSIS/BODY	RADIO/ESC	MOTOR	TIRES (F/R)
1	MASAMI HIROSAKA	RC10 WORLDS/MIRAGE SS	KO ESPRIT II/NOVAK 410 HPC	REEDY SONIC	LOSI HT RIB/PRO-LINE FUZZIES
2	MARK PAVIDIS	RC10 WORLDS/RCPS MIRAGE	AIRTRONICS C52P/NOVAK HPC	REEDY SONIC 10 QUAD	LOSI HT/XTR FLAT FUZZIES
3	MATT LEDGER	RC10 WORLDS/RCPS MIRAGE SS	JR REMOTE R-756/NOVAK HPC	REEDY SONIC	LOSI HT/PRO-LINE FLAT FUZZIES
4	CARLOS GONZALES	RC10 WORLDS/RCPS MIRAGE SS	AIRTRONICS CALIBER	REEDY SONIC G	LOSI HT RIB/PRO-LINE FLAT FUZZIES
5	SCOTT HUGHES	RC10 WORLDS/RCPS MIRAGE	FUTABA FM/NOVAK HPC	REEDY 11 4	LOSI HT/PRO-LINE FLAT FUZZIES
6	CLIFF LETT	RC10 WORLD/RCPS MIRAGE	AIRTRONICS C52P/NOVAK	REEDY SONIC 10 QUAD	PRO-LINE 4-RIB/FUZZIES
7	GREG HODAPP	RC10 WORLDS/RCPS MIRAGE SS	C52P/NOVAK 410 HPC	REEDY SONIC	LOSI HT RIB/PRO-LINE FLAT FUZZIES
8	JASON RUONA	RC10 WORLDS/RCPS MIRAGE SS	C52P/NOVAK HPC	REEDY SONIC G	LOSI HT/PRO-LINE FLAT FUZZIES
9	SCOTT ROBERTS	LOSI XX/LOSI PRO SE	JR REMOTE/NOVAK HPC	PEAK PERFORMANCE 13D	LOSI
10	RICK HOHWART	LOSI XX/JAMMIN' JAY	FUTABA/NOVAK 410 HPC	PEAK 12Q	LOSI HT RIB /IFMAR PIN (GOLD)

## 2WD STOCK

POS.	DRIVER	CHASSIS/BODY	RADIO/ESC	MOTOR	TIRES (F/R)
1	JAY ROBINETTE	LOSI XX/JAMMIN' XX	AIRTRONICS CALIBER/NOVAK 410 M1C	HANDOUT	HT RIBS/JAMMIN' MINI-PINS
2	DARRYL JENDREAS	XX/STOCK	AIRTRONICS/NOVAK	HANDOUT	LOSI
3	BARRY BAKER	ASSOC. RC10/RCPS MIRAGE	KO PROPO/NOVAK 410 HPC	HANDOUT	PRO-LINE/FLAT FUZZIES
4	TODD LEWIS	LOSI XX/STOCK	JR REMOTE/TEKIN 411G2	HANDOUT	LOSI HT RIB/JAMMIN' MINI-PIN "G"
5	DEAN KARNS	LOSI XX/JAMMIN'	KO PROPO/NOVAK	HANDOUT	LOSI RIB/LOSI MINI-PINS
6	JIM BROWN	LOSI XX	AIRTRONICS CALIBER/NOVAK 410 HPC	HANDOUT	LOSI HT RIB /IFMAR STUDS (GOLD)
7	CRAIG LAIR	LOSI XX/JAMMIN' XX	AIRTRONICS/NOVAK	HANDOUT	LOSI HT RIB/IFMAR PIN GOLD
8	JEFF RETEY	RC10 STOCK/RCPS MIRAGE SS	AIRTRONICS CALIBER/NOVAK HPC	HANDOUT	GROOVIES/PRO-LINE 8083
9	FRANK CALANDRA	XX	JR REMOTE R756/NOVAK HPC	HANDOUT	RIB XT/GOLD STUD
10	CHAD O'DAFFER	RC10 STOCK/RCPS	AIRTRONICS XL2P/NOVAK M1C	HANDOUT	LOSI HT RIB/PRO-LINE 8083

## TRUCK MODIFIED

POS.	DRIVER	CHASSIS/BODY	RADIO/ESC	MOTOR	TIRES (F/R)
1	MARK PAVIDIS	RC10T ALUMINUM/ASSOC. NARROW	AIRTRONICS CS2P/NOVAK HPC	REEDY SONIC M	PRO-LINE
2	JASON RUONA	RC10T/STOCK	CS2P/NOVAK HPC	REEDY SONIC M	PRO-LINE 8065/8090
3	DEREK FURUTANI	RC10T TEAM TRUCK/TEAM TRUCK	CS2P/NOVAK HPC	REEDY SONIC	PRO-LINE PRO 65/90
4	CARLOS GONZALEZ	RC10T/TEAM TRUCK	AIRTRONICS CALIBER/NOVAK HPC	REEDY SONIC M	PRO-LINE XTR-65/MINI-PIN XTR
5	PAUL WYNN	RC10T/ASSOC.	AIRTRONICS/TEKIN 411G2	REEDY SONIC	PRO-LINE 65/MINI-PIN
6	BRET REELFS	RC10T/TEAM TRUCK	AIRTRONICS CALIBER/NOVAK HPC	REEDY SONIC M	PRO-LINE 8065/MINI-PIN
7	SCOTT HUGHES	RC10T	FUTABA PCM/NOVAK HPC	REEDY SONIC 13	PRO-LINE 64/MINI-PIN
8	GREG HODAPP	RC10T	CS2P/NOVAK 410 HPC	REEDY SONIC M	PRO-LINE 8063/8090
9	RUFFY RIOS	LX-T TUB/ASSOC. NARROW TRUCK	CS2P/NOVAK MX-C	REEDY SONIC S	PRO-LINE 8065/8090
10	MIKE WEED	LOSI	CS2P/NOVAK HPC	PEAK PERFORMANCE 13D	HT RIB/GOLD STEP PIN

4WD A-Main

Truck A-Main

2WD Mod A-Main

2WD Stock A-Main







## The "Berm"

A new competitive event was added to the Winter Champs this year. It required skill, speed and a little R/C lunacy. After almost a week of practice, tuning, charging, staying up late, qualifying and running the Mains, the drivers were ready to let loose. What better way to do this than by jumping the "Berm"? The Berm is the first banked turn coming off the straightaway. It's pretty steep, and it had caused problems for a lot of racers. There's a 7-foot wooden fence approximately 10 feet behind it. As the Mains wound down and the race was ending, several of the drivers decided to test their cars' (and trucks') capabilities by flying straight off the Berm and trying to clear the fence. After several drivers had done this successfully, chants of "Berm! Berm! Berm!" were heard after each Main, and almost every driver attempted to join the elite club of racers whose vehicles cleared the fence. The loudest cheer went up for Masami Hirosaka, whose 4WD buggy cleared the barrier as if it had wings. The real crowd-pleasers, though, were the vehicles that didn't have enough power left at the end of their race to clear the fence. When you drive a modified truck off a jump into a fence at full speed, the damage can be major! The area looked like a junkyard for R/C cars. Broken, twisted and mangled vehicles lay on both sides of the fence. It was cool!



the field in Mod Truck, topping his closest rival by more than 7 seconds with nine laps in 4:21.140. That was 2 seconds faster than Masami's TQ in Mod Car. The Stock TQ went to perennial A-Mainer Todd Lewis, with eight laps in 4:08.680.

Tomorrow would be the big day! Back at the motel,

lights were on late into the night as the drivers prepared for their final shot at glory. Whether it was the A-Main or the R-Main, everyone wanted to win and go home with a trophy.

### THE MAIN EVENT

As the drivers arrived at the track on Sunday morning, you could feel the tension mounting. To ease a little of the pressure, the first event was a gas-truck demonstration. Speed was the thing; you could tell these nitro racers were pulling out all

the stops.

The Mains were about to start. The first class to be decided was Stock 2WD. Pacesetter Todd Lewis took an early lead but ran into traffic on the second lap and dropped back in the pack. Third qualifier Jay Robinette went ballistic turning consistent 30-second laps and went on to win with eight laps in 4:09.260. Darryl Jendreas moved up from seventh to capture the second spot, and Barry Baker finished in the show position. In the Mod Truck and 2WD Mod classes, the drivers ran three

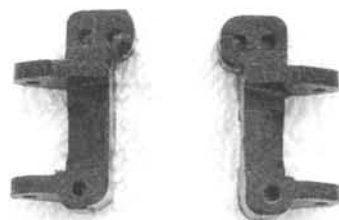
## Reach the Peak

Peak Performance president (and racer) Rick Hohwart showed me their new line of modified motors—the Turbo Series. The motor will have stronger wet magnets, a lay-down brush configuration and an enlarged commutator to dissipate heat more effectively. In addition, the armature will be finned to draw air through the endbell to cool the brushes and comm so that they'll last longer. This design will be the base of all of their hand-wound modified motors. New winds include a 14 triple and a 13 double.



## What's the Temperature? 25 Degrees!

Ask Jay Robinette about Team Losi's new 25-degree caster blocks for the Double-X buggy; he won the Stock A-Main using them. These new blocks provide less high-speed steering and more low-speed steering. Some drivers reported entering the turns more smoothly and being able to maintain more speed through them. According to Gil Losi Jr., with the new blocks, steering isn't better—just different.



## Thar's Gold in Them Thar Shocks

Eustace Moore of MIP\* brought his product board along to display most of his after-market parts. Gold Shock Shafts are among his newest items. They're precision machined of 17-4 stainless steel and polished to a micro finish. A coat of high-quality titanium nitride ensures durability and smoothness and gives them a 24-karat look.



A-Main races to determine the top finisher.

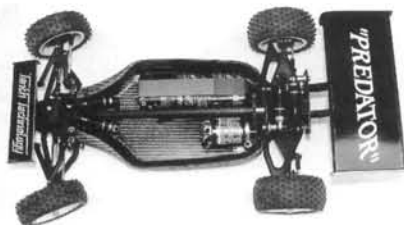
Mark Pavidis finished first and second in his first two races, as did Jason Ruona. It came down to the third Main to determine the winner. Pavidis pulled a holeshot and finished first for top honors of the day. Ruona finished second, and Derek Furutani rounded out the top three. In 2WD Mod, Pavidis again had his sights on the first-place trophy. It went down to the third race again to determine the winner, with TQ Masami Hirosaka finishing first overall, with two

# What's hot in the pits!



## Yumpin' Yimminy

Lars Nordin of Sweden's Procar Speedshop\* displayed some neat new wheels for 2WD and 4WD buggies. They're made of an extremely stiff, lightweight compound. The wheels are available for Yokomo, Kyosho, Associated and Losi buggies.



## Brand-New and Nasty

A brand-new entrant in 4WD competition—the "Predator"—comes from Tenth Technology\*, a company in England. It was designed from scratch by Richard Weatherley, and let me tell you, it's unique. The tranny is a new design that has only three gear meshes. It uses the same type of diff at both ends and has a

carbon-fiber shaft drive. The motor is mounted longitudinally, just to the side of the drive shaft, with an eccentric cam adjustment for pinion/spur mesh. A clamp holds the motor in place. This in-line motor position provides better weight distribution and cooling. The tub, wing, body and even the shock configuration were wind-tunnel tested to provide the best possible aerodynamics. The dynamite-looking Predator made it to the A-Main, proving that it can run with the big boys. Look for an in-depth report in a future issue of *Car Action*.



## Stormin' Schumacher

The Schumacher\* Storm 2000A is a brand-new entrant in the truck division. This racer has all the goodies to make it competitive right out of the box. It has a double-deck chassis for strength, longer suspension arms, new shock mounts and wheels with a deeper offset. According to Schumacher, this setup will provide a smoother ride over rough surfaces and more correct offset in the kingpins and rear hubs to reduce wheel scrub. The tranny features ultralight gears for quicker acceleration, new coaxial drive shafts with a closed slider-shaft system and anodized shocks with stainless-steel shafts. It can accommodate seven cells in-line. The truck is available in both gas and electric versions.

Also new from Schumacher are the CCD20 charger and D20 discharger. The charger can charge and cycle, and both can discharge at a simulated 20A rate, controlling the battery temperature by pulsing the discharge to simulate a race-condition discharge.



## We're Back!

Last year, Anibal Silva and Jose Luis Martino attended the Winter Champs as spectators. The amazing thing is that they traveled several thousand miles to do so. As representatives of the Las Fuentes R/C Club in Caracas, Venezuela, they watched, listened and learned. This year, they came back with a vengeance, bringing eight drivers and their families to participate. The group had its own large tent, and everyone was decked out in beautiful Team Venezuela jackets and club hats. Although no one finished in the A-Main, everyone agreed that the trip was well worth it. The group plans to return next year for another Florida R/C "celebration."



firsts and a third in the Mains. Pavidis finished second, and Matt Ledger came in third. The final Main of the day was modified 4WD. Hirotsuka lived up to his number-one world ranking by turning nine laps in 4:22.920

to take the win. Jurgen Lautenbach placed second with eight laps in 4:00.330, and Eirik Andreassen edged B.J. Christensen by half a second for third.

What a weekend—topnotch racing and plenty of it! The

weather was perfect, and so was the sportsmanship. As the trophies were handed out and the drivers said goodbye to old friends and new ones, I couldn't help but wonder whether it would be this

good again next year. I sure hope so. I love this place!

\*Addresses are listed alphabetically in the Index of Manufacturers on page 153.



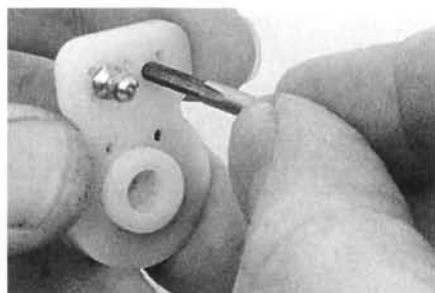


# R/C DOCTOR

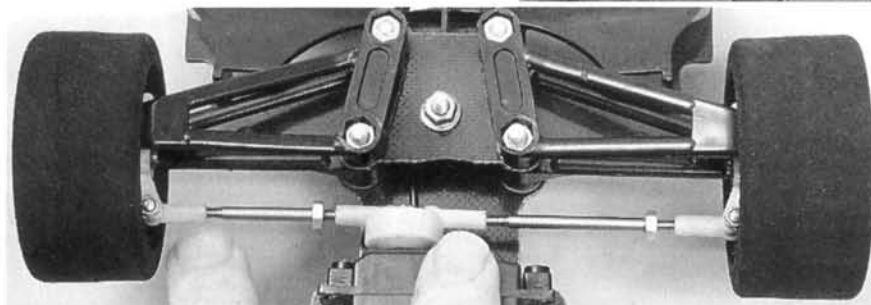
by DOUG MERTES

## Eight Easy Tech Tips!

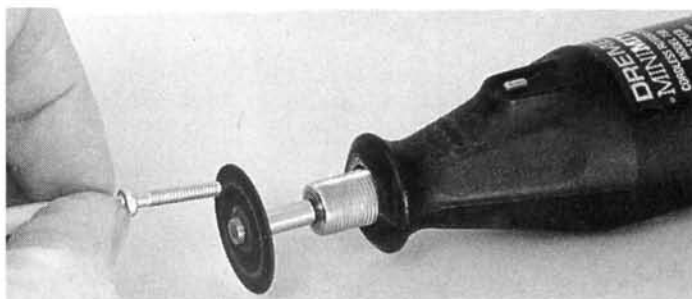
**T**HIS MONTH, let's take a look at some ways to make your R/C chores easier and faster and your R/C parts last longer. I've picked up most of these tips without even thinking about them. I'm sure that you, certainly the most informed in all of R/C'dom, probably have some great ideas, too. If you'd like to tell me about a variation on one of these tips, write to the R/C Car Doctor, c/o R/C Car Action, 251 Danbury Rd., Wilton, CT 06897.



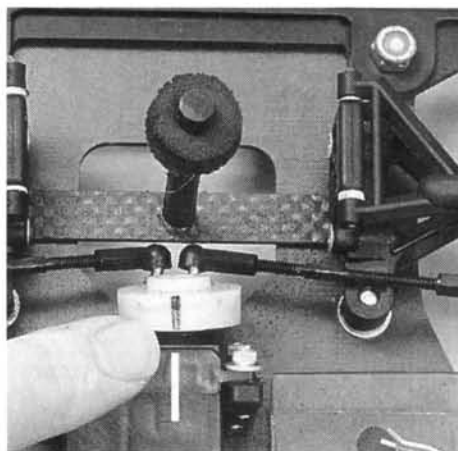
**1** Does your servo-saver crack where the ball end is threaded through it? Next time, try tapping the holes in the servo-saver using a 4-40 tap. (Du-Bro\* offers a good one for a couple of bucks.) This will prevent the plastic from becoming jammed and deformed in the thread area, so it won't break when you whack something hard.



**2** Which threaded end on your turnbuckles is the left-hand one? For years, I've seen guys in the pits turning their turnbuckles first one way, then the other, to find out. Use this simple rule: put all the left-hand threads on the car's left side. Then you'll always know which way to adjust them. (Now if I could only figure out a similar rule for front-to-back ones, such as those on the EV10.)

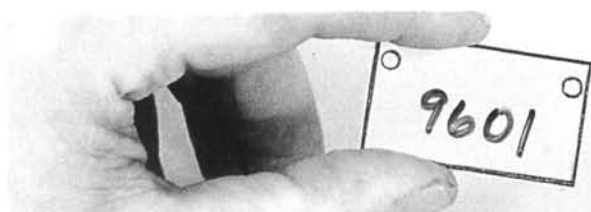


**3** When you cut a threaded rod, a small bolt, or a turnbuckle, always smooth the end using a small file or a Dremel wheel. The rod ends will go on straight, and they'll also be much stronger because the rough end won't chew up the nylon inside the bore.

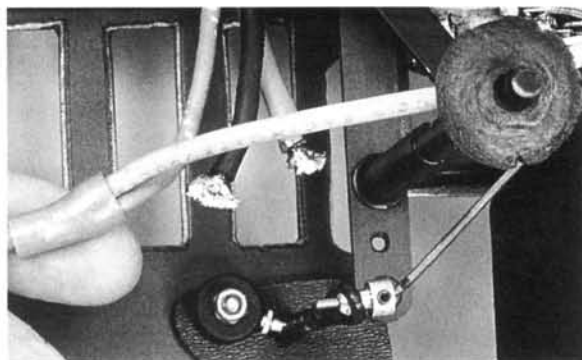


**4** Do you ever wonder where your servo is going to center up when you're making a steering-linkage adjustment? That's why you see so many racers resetting their steering trim before every heat. Try this: after you've set your steering at home, put a stripe of white Mylar (MonoKote\*

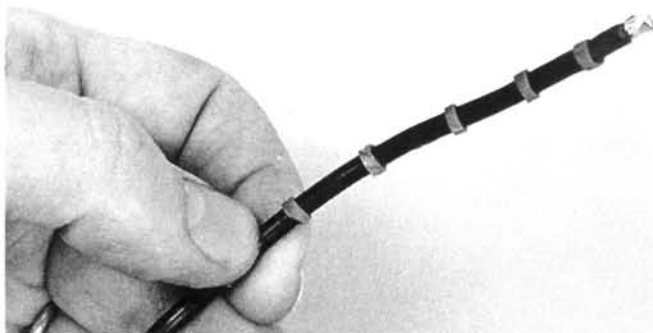
trim and pinstriping tape work well) on your servo case and a strip of black Mylar on the top of your servo-saver. Line up both stripes at the track, and that's where you'll center up when you turn your radio on—no more burning off your peak before the race.



**5** This one took me years to learn. To ensure that you drill your servo-mounting holes in the correct places, make a template out of Lexan. You could use paper or cardboard in a pinch, but it's easier to drill when you can see through the template. Mark and drill the holes in the Lexan, double-check them, and transfer the spacing to your chassis. It works!



**6** Forget trying to shrink-wrap the connection between your ESC's red wire and the red battery wire. I never had the right-size shrink-wrap when I needed it, and the stuff always splits after a couple of weeks. Instead, try a piece of  $\frac{1}{8}$ -inch-i.d. fuel line (or smaller, if you use wire smaller than 13-gauge). Just make the splice, and slide the fuel line right over the wires. It works like magic, and it's reusable, too!



**7** Late one night, I decided to rewire my ESC. Only after I had removed the negative motor wire did I discover that I was out of blue wire. I didn't want to put the old piece back on, and I didn't want to use black wire and risk confusing the motor and battery wires. So I pulled about an inch of wire out of the blue piece that I had. This left me with a thin blue tube, which I cut into eight or nine rings. Then I slid the rings over a piece of black wire of the right length.



**8** Unhappy with the way my Novak\* FM receiver sat on the chassis when it was mounted on its side (I put it that way for better reception), I looked for ways to support it in case of an accident on the track. Lexan to the rescue! Bend a  $\frac{1}{4}$ x1-inch piece to form a 90-degree angle. Snug it up against your receiver (or ESC) on the side and the chassis plate on the bottom, and secure it using servo tape. Mine has never come off!

\*Addresses are listed alphabetically in the Index of Manufacturers on page 153.

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### ALABAMA

**Berry R/C Raceway**, Main St., Berry, AL 35543; Ronny, Don, (205) 932-3189

**Bryan's Hobby Shop**, 2837 Ross Clark Circle, Dothan, AL 36301; Bryan Maupin, (205) 793-2439

**CJ's Hobbies**, 3761 Government Blvd., Mobile, AL 36693; C.J., (205) 666-0016

**Dixie R/C Speedway**, Rt. 10, Box 210, Gadsden, AL 35901; Craig Reynolds, (205) 442-1059

**Fleming's R/C Raceway**, 169 Raceway Dr., Wellington, AL 36279; Phil Fleming, (205) 820-6269

**Oak Mountain Raceway & R/C Club**, 2624 Janice Circle, Birmingham, AL 35235; Will Barrett, (205) 856-7051

**Performance R/C Hobby**, 2600 A Beltline Rd., Decatur, AL 35603; Ray & Debra Steen, (205) 353-3399

**Phenix Raceway**, 2006 Opelika Rd., Phenix City, AL 36867; Casey Hoover, (205) 297-0040

**Piedmont R/C Superspeedway**, 41 Jewel Lane, Oxford, AL 36203; Terry Young or Greg Gaines, (205) 831-2986 or 831-1666

**R/C Hi-Tech Raceway**, 3303 Meridian St., Huntsville, AL 35811; Rick Chambers, (205) 539-1347

**Satellite Hobbies**, 2799 Rose Rd., Albertville, AL 35950; Troy or Jerry Smith, (205) 878-2526

**Spring Cove Speedway**, Rt. 1, Box 95, Florence, AL 35630; Chuck or Lyda Syppitt, (205) 757-5998

### ALASKA

**ARCORR**, 2812 Spenard Rd., Anchorage, AK 99503; Jim Raffuse, (907) 277-7778

**McKinley Hobby & Raceway**, 2300 McKinley Dr., Wasilla, AK 99654; (907) 376-9351

**Seth's Speedways**, 3400 Hiland Dr., Anchorage, AK 99504; Seth Graham, (907) 337-3777

**Stump Hobby & Track**, 13651 Jarui, Anchorage, AK 99504; Don Stump, (907) 345-8476

### ARIZONA

**Economy One-Stop Raceway**, 4000 S. 4 Ave., Yuma, AZ 85366; (602) 344-3514

**Finish Line Raceway**, 7025 E. 21st St., Tucson, AZ 85710; Jerry Kikkert, (602) 747-3633

**Frank's Hobby House**, 19401 N. Cave Creek Rd., Phoenix, AZ 85024; Marty, (602) 992-3495

**G&S Raceway**, 967 Hancock, Bullhead City, AZ 86442; Bob Olsen, (602) 758-1100

**Havasut R/C Raceway**, 1081 Desert View Dr., Lake Havasu City, AZ 86403; Bernie Coates, (602) 680-6304

**HobbyTown Raceway**, 9180 E. Indian Bend Rd., Scottsdale, AZ 85250; Dennis, (602) 948-3946

**HobbyTown Raceway**, 1915 East Baseline Rd., Gilbert, AZ 95234; Kenny, (602) 892-0405

**HobbyTown Speedway**, 2814 W. Bell Rd., Phoenix, AZ 85023; Mike Kaminski, (602) 993-0122

**Outlaw Raceway**, 5309 Lakewood Rd., Ft. Mohave, AZ 86427; Frank Greely, (602) 768-5001

**Parker 4-H R/C Raceway**, P.O. Box 5342, Parker, AZ 85344; Bill Silvers, (602) 667-4261

**Quarter Flash's Squirtin' Dirt Raceway**, 16301 S. Santa Rita #C, Sahuarita, AZ 85629; Dave or Randy, (602) 625-9274

**R/C Sports Mania**, 3550 N. 35th Ave., Phoenix, AZ 85017; Brian Dick, (602) 278-3671

**Race Prep Raceway**, 852 S. Hwy. 89, Chino Valley, AZ 86323; Mike Dunn, (602) 636-1955

**Scale Racing Sports**, 1120 N. Hayden Rd., Tempe, AZ 85281; Mike, (602) 829-9117

**Sierra Vista Raceway**, 105 N. Central Ave., Sierra Vista, AZ 85635; Wayne Tuthill Sr., (602) 459-1335

**Speedway Hobbies**, 1000 N. Humphreys St., #204, Flagstaff, AZ 86001; Gary McAllister, (602) 556-0710

**Arkansas Int'l. Superspeedway**, P.O. Box 1636, Pine Bluff, AR 71613; Joe Pitts, (501) 247-2371

**DCA Racing**, 412 Hiway & 14th St., Paragould, AR 72450; Lyle Spillman, (501) 236-9706

**Performance Hobbies**, 2222 Spence, Jonesboro, AR 72401; Rick Winningham, (501) 935-6501

**Appletree Raceway**, 1303 Hermosa Ave., Pacifica, CA 94044; Sonny Day, (415) 359-9755

**Hobbytown Raceway**, 1330 Keystone Way, Vista, CA 92083; Bryan Bahlmann, (599)-0456

**Bob & Jim's R/C World**, 3485 University Ave., Riverside, CA 92501; Bob Parcell, (714) 684-6314

**Brake-a-Way Raceway**, 3179 Hamner Ave., Norco, CA 91760; Debbie Burrie, (714) 736-6063

**California Auto Racers (CAR)**, 96 San Tomas Aquino Rd., Campbell, CA 95008; Club Message Line, (415) 508-9971

**Cats West Raceway**, 5631 Old Lonetree Way, Antioch, CA 94509; Jerry Winkelbaver, (510) 779-0505

**City Speedway**, 7750 Convoy Ct., San Diego, CA 92111; (619) 560-9633

**Cloverdale R/C Raceway**, 1 Citrus Fair Dr., Cloverdale, CA 95425; Tom Kelley, (707) 586-9789; track, (707) 894-4468

**Covina Racing Company**, 1611 W. San Bernardino Rd., Covina, CA 91722; Tom, (818) 331-4984

**Cycle Art Raceway**, 2211 N. Pleasant Way, Fresno, CA 93705; Richard De Benedictis, (209) 233-3665

**D&D Raceway**, 290 S. First St., Turlock, CA 95380; Dave Miller, (209) 667-0970

**D&S Raceways**, 18981 Geer Ave., Hilmar, CA 95324; Joel Devine, (209) 632-4453

**Desert R/C Raceway**, 9231 E. Hobson Way, Blythe, CA 92225; Rodney Lazenby, (619) 922-5516

**Fast Lane**, 25845 San Fernando Rd., #21, Saugus, CA 91350; (805) 255-2404

**Frogdown R/C Raceway**, Motherlode Hobbies, 3069 Hwy. 49, Angels Camp, CA 95222; (209) 736-4989

**Gina's R/C Palace**, 1839 Olympus Loop Dr., Vista, CA 92083; Gina Garner, (619) 598-8069

**Greater Los Angeles R/C Racing Club**, California State University, Parking Lot A, Los Angeles, CA 90045; Glenn Williams, (213) 734-7888 or Tom Wong, (310) 821-5472

**Gyro Hobbies**, 23052 Lake Forest Dr. C-2, Laguna Hills, CA 92653; Craig Prentiss, (714) 583-1775

**Hobbycrafters**, 1319 Pacific Blvd., Oceano, CA 93445; Craig or Damian, (805) 481-3883

**Hobby Haven Raceway**, 3983 First St., Livermore, CA 94550; Tom Welding Jr., (510) 443-5828

**Hobbytown Raceway**, 1330 Keystone Way, Vista, CA 92083; Bryan Bahlmann, (599)-0456

**Hobby Warehouse**, 5500 So. Watt, Sacramento, CA 95828; Roger Hubbard, (916) 381-7587

**Jake's Performance Hobbies**, 6650 Commerce Blvd. #21, Rohnert Park, CA 94928; Jake, (707) 586-3375

**JD Hobbies**, 1009 W. College Ave., Santa Rosa, CA 95401; Mike, (707) 571-1700

**K&M R/C Raceway**, 22474 A Barton Rd., Grand Terrace, CA 92324; Mike Blake, (714) 783-0899

**KW Raceway**, 5630 Ager Rd., Montague, CA 96064; Keith Wilson, (916) 459-3787

**Lethal Weapon Raceway**, 108 Karen Ct., Arumas, CA 95004; Jerry Seagraves, (408) 726-3642

**Lindsey's R/C Raceway**, P.O. Box 443, Doyle, CA 96109; (916) 827-2457

**Lodi's Radio Control Speedway**, 1033 Black Diamond, Ste. B, Lodi, CA 95240; Mike Belanger, (209) 334-5681

**Lucerne Valley Raceway**, 32800 #4 Old Woman Springs, Lucerne Valley, CA 92356; Frank Rodrigue, (619) 248-7305

**Merced R/C Auto Racers (MRCAR)**, 779 E. Jefferson, El Nido, CA 95317; Steve or Kathleen Freitas, (209) 383-5352

**MnM Hobbies**, 137 N. Vander, Corona, CA 91720; Don Hughes, (909) 272-3545

**Outlaw R/C Hobbies**, 7920 Webster, Highland, CA 92346; Rick James, (909) 864-1770

**Perris Recreation R/C Track**, 120 N. Perris Blvd., Perris, CA 92370; Len or Fay Shirley, (714) 943-6603 or 657-4879

**Pole Position Speedway**, 43719 Sierra Hwy. #A, Lancaster, CA 93535; Cory Davis, (805) 948-1335

**R/C Off-Road Raceway**, 10810 Talbert Ave., Fountain Valley, CA 92708; Jeff Paul or Bob Fiege, (714) 965-9615

**R/C Speedway and Hobbies**, 1453 North Milpitas Blvd., Milpitas, CA 95035; Mike Melat, (408) 263-4228

**R/C Racing Center and Hobbies**, 9842 Channel Rd., Lakeside, CA 92040 (San Diego County); Russ or Cindy Escalera, (619) 443-2270

**R/C Sports**, 759 E. Monte Vista Ave., Vacaville, CA 95688; (707) 446-5555

**The Race Place**, 13564 E. Imperial Hwy. Unit G, Santa Fe Springs, CA 90670; (213) 926-7711

**Race Prep Raceway**, 20115 Nordhoff, Chatsworth, CA 91311; Steve Dunn, (818) 709-6800

**Racer's Haven Hobby**, 7401 White Ln., #9, Bakersfield, CA 93389; Martin Buchanan, (805) 835-0441

**RAMS**, Murco Plaza, Paseo Padre Pkwy. & Mowry East, Fremont, CA; Mike Alton, (510) 490-8734

**Ranch Pit Shop**, 1655 E. Mission Blvd., Pomona, CA 91766; Billy Bowlerman, (909) 623-1506

**RCRC Hobbies**, 2069 Pacific Coast Hwy., Lomita, CA 90717; Rhea & Cliff Fisher, (310) 530-7272

**Rick's R/C Speedway**, 217 3rd St., Eureka, CA 95501; Rick Hynard, (707) 445-3341

**Ricky Racers**, 14568 Arrow Hwy., Fontana, CA 92335; Kevin, (909) 822-0226

**Robin's Racing World**, 1844 W. Glenoaks, Glendale, CA 91201; (818) 240-2093

**San Diego R/C Car Club**, P.O. Box 232456, San Diego, CA 92193; (619) 560-0089

**Scott's Practice Track**, 1131 Ramona Dr., Mt. Shasta, CA 96067; Scott Cleveland, (916) 926-1012

**So. Cal R/C Raceway**, 11930 Valley View St., Garden Grove, CA 92645; Jim Blauvelt, (714) 892-0088

**Square Roundhouse R/C Speedway**, 1468 Lander Ave., Turlock, CA 95380; (209) 668-4454

**SRS Raceway**, 915 N. Main St., Salinas, CA 93906; (408) 424-4044

**Tanforan Action Track**, Tanforan Shopping Center, San Bruno, CA 94066; Jerry Imboden, (415) 583-2683

### KEY TO SYMBOLS

- Indoor
- Outdoor
- Off-road
- Oval
- Dirt oval
- Carpet
- Concrete
- Asphalt
- On-site hobby shop
- AC power
- Auto lap-counting
- Food available

# Track Directory

**Team Air Racing Club**, 18208 Imperial Hwy., Yorba Linda, CA 92686; Don or Nicky, (714) 579-7488



**Ultimate Hobbies**, 2143 N. Tustin Ave. #6, Orange, CA 92665; (714) 921-0424



**Valley R/C Race Park**, 146 S. Santa Fe St., Hemet, CA 92344; Valley Wide Recreation, (714) 654-1505 or 658-4322



**Ventura Road Runners/Freedom Park Raceway**, 520 Freedom Park, Camarillo, CA 93010; Les Abramson, (805) 484-8920 or Ed Haney, (805) 499-8266



**Victory Speedway**, 22960 Victory Blvd., Woodland Hills, CA 91367; Bob Sarnelle, (818) 888-9000



**White Mountain R/C Raceway**, 174 West Line, Bishop, CA 93514; (619) 872-1599



**Zero'n'4 Hobbies**, 3360 S. Fairway, Visalia, CA 93277; Eddie McKay, (209) 733-1840



## COLORADO

**J.P.'s Raceway**, P.O. Box 933, Ignacio, CO 81137; Jim A. Paul, (303) 563-0025



**MHOR R/C Raceway**, 15540 E. Batavia Dr., Aurora, CO 80011; Jess Brockman, (303) 343-0151



**Miracle R/C Speedway**, 4206 Wadsworth Blvd., Wheatridge, CO 80034; Rob Brossman, (303) 420-3051



**R/C Mini Sports**, 6401 Broadway, Unit G, Denver, CO 80223; John Weins, (303) 426-0110



**R/C World & Track**, 2788 S. Federal Blvd., Denver, CO 80236; (303) 789-0838



**Rocky Mountain R/C Raceway**, 5737 Constitution Ave., Colorado Springs, CO 80915; Lee Seigel, (719) 550-1777



## CONNECTICUT

**Crafttech R/C**, NILON SUBASE, Box 14 MWR, Grotton, CT 06349; Steve Komarinetz, (203) 449-4314



**CT R/C Off-Roaders**, behind Old Field School, Fairfield, CT 06430; Mike Belmonte, (203) 661-0145



**Hobby World Raceways**, 161-6 Woodford Ave., Plainville, CT 06062; (203) 793-1111



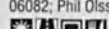
**JP's Hobbies & Track**, 54 Wakelee St. Ext., Seymour, CT 06483; (800) 547-5772



**K/N R/C Speedway Inc.**, West St., Stafford Springs, CT 06076; (203) 684-9896



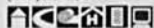
**NERCAR**, 36 Glendale Rd., Enfield, CT 06082; Phil Olsson, (203) 627-5410



**R/C Madness**, 640 Enfield St., P.O. Box 64, Enfield, CT 06082; Christopher Marcy, (203) 741-6501



**R/C Raceways Inc.**, 1265 John Fitch Blvd., South Windsor, CT 06074; (203) 528-3661



**R/C World/Sugar Hollow Speedway**, 66 Sugar Hollow Rd., Danbury, CT 06810; (203) 748-2185



**Wallingford Indoor Racing**, 63 N. Cherry St., Wallingford, CT 06492; (203) 265-3939



## DELAWARE

**4E Hobbies**, 1138 West Dupont Hwy., Millsboro, DE 19966; Peggy Evans, (302) 934-1708



**Hobby Works Raceway**, Hamlet Shopping Center, Dover, DE 19901; Steve or Gordon, (302) 674-9123



**Mills Raceway**, RD 2 Box 83D-8, Milford, DE 19963; Mike Roe, (302) 422-6766



**T&C Raceway**, Rt. 113 South, Georgetown, DE 19947; Sam Thompson Jr., (302) 856-3804



**T.N.T. Hobbies & Raceway**, 609 Stein Hwy., Seaford, DE 19973-0464; Thorpe Shatney, (302) 628-0520



## FLORIDA

**B+T R/C Central**, 811 Playground Rd., Ft. Walton Beach, FL 32547; (904) 863-2666



**Brantford R/C Speedway**, Rt. 3 Box 240, Brantford, FL 32008; (904) 935-0758



**Broward County R/C Race Club**, 2201 NW 9th Ave., Mills Pond Park, Ft. Lauderdale, FL 33314; Ed, (305) 480-9374 or John, (305) 925-8284



**Challenger Speedway at the Willows**, Willows Park & Okeechobee Blvd., Royal Palm Beach, FL 33414; Walt, (407) 965-2790 or Mark, (407) 790-6917



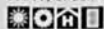
**Coral Springs Roadrunners**, P.O. Box 9632, Coral Springs, FL 33075; Tom Allison, (305) 721-0344 or Rick Schwartz, (305) 344-1983



**Doc's Indoor R/C Raceway**, 16803 US 19N, Clearwater, FL 34624; Steve "Doc" Wacholz, (813) 824-7702



**5-lifty-5 Raceway**, 125 Second Terrace West, Winter Haven, FL 33880; Chuck Nolke, (813) 324-7406



**FYRE**, 14160 Hwy. 441 (River Plaza), Tavares, FL 32728; Ray Salerno, (904) 357-1635



**Gainesville R/C Speedway**, 9311 SW 75 Way, Gainesville, FL 32608; Greg Rhodes, (904) 495-3600



**Greater Orlando Auto Racers**, 970 Keller Rd., Altamonte Springs, FL 32714; Dave Mottin, (407) 293-7090



**Hobby Shop Speedway**, 4805 Hwy. 22, Panama City, FL 32404; Larry Pollock, (904) 763-4599



**JARCAR Raceway**, 7273 103rd St., Jacksonville, FL; Ray or Greg, (904) 772-9022



**Kenny's Track & Hobby**, 11125 U.S. 41 South, Gibsonton, FL 33534; Kenny Ryals, (813) 671-9123



**Lake Whippoorwill International Speedway**, 12345 Narcoossee Rd., Orlando, FL 32827; Bob Hosch, (407) 277-9586; fax (407) 277-2568



**Louie Burton's R/C Raceway**, 4215 Mustang Rd., Lakeland, FL 33803; Louie Burton, (813) 665-1322



**M&M R/C Raceway**, 16921 Waterline Rd., Bradenton, FL 34202; Mike Williams, (813) 747-2889



**Miami R/C Speedway**, 12546 N. Kendall Dr., Miami, FL 33186; Jeff Mayorga or Pat Butler, (305) 271-3101



**Miami Speedway**, 7805 NW 148th St., Miami Lakes, FL 33014; Julio Romero, (305) 687-6728



**My Rose**, 1695 W. Indiantown Rd., Jupiter, FL 33458; Mark Watson, (407) 744-3800



**Ocala R/C Car Club**, P.O. Box 70166, Ocala, FL 32670; Larry E. Mitchell, (904) 245-2609; Steve Shook, (904) 694-5147



**Oceanside Raceway**, 206 E. Eau Gallie Blvd., Indian Harbour Beach, FL 32937; Michael Kelly, (407) 242-0434



**Paul's R/C Track & Hobby**, 4511 Dr. M.L. King Blvd., Suite 8, Tampa, FL 33614; Paul or Eula Surrette, (813) 872-8662



**PBG R/C Motor Park**, 6351 Barbara St., Palm Beach Gardens, FL 33410; Doug Gleason, (407) 743-9791



**Pro Hobbies Speedway**, 715 N. Lake Pleasant Rd., Apopka, FL 32712; (407) 886-4615



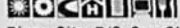
**R/C Action**, 646 Choy Lee Circle, Orlando, FL 32708; (407) 695-6746



**Red's R/C Raceway & Hobbies**, Etc., 1010 Creighton Rd., Pensacola, FL 32504; Linda Till, (904) 479-2330



**Rental Raceway**, 3655 S. Hopkins Ave., Titusville, FL 32780; (407) 383-0631



**River City R/C Car Club**, 9711 Sharing Cross Dr., Jacksonville, FL 32257; Bill Fraden, (904) 268-1948



**Southwest Florida R/C Raceway**, 2425 Rivers Rd., Naples, FL 33964; Clyde Armstrong, (813) 455-1143



**Sun Valley Speedway**, Palmer Blvd., Sarasota, FL 34232; (813) 322-1200; (mailing address: Rt. 1, Box 443N, Myakka City, FL 34251)



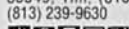
**Three Flags R/C Racetrack**, Rt. 2, Box 48-A, Wildwood, FL 34785; Don Meares, (904) 748-3870



**Treasure Coast R/C Club**, 4931 Oleander, Fort Pierce, FL 34982; Lou, (407) 464-3207



**West Coast R/C Club**, Lake Park, 17203 N. Dale Marry, Tampa, FL 33549; Tim, (813) 932-3650; Bob, (813) 239-9630



**Wilbur Avenue Raceway**, 1848 Wilbur Ave., Vero Beach, FL 32960; (407) 567-1200



## GEORGIA

**A.R.C. Raceway**, 350 Shyrewood Dr., Lawrenceville, GA 30243; (404) 962-6194 or 962-8921



**ARCAR Raceway**, 6894 Buford Hwy., Doraville, GA 30340; Greg Coan, (404) 448-4533



**Carnesville R/C Speedway**, Rt. 2, Box 2354, Carnesville, GA 30521; Bobby Maxwell or Byron Sartain, (404) 384-4870 or 384-4587



**Case R/C Raceway**, P.O. Box 1061, Trenton, GA 30752; (404) 657-6789



**Chaffee Park Raceway**, 1800 Pearl Ave., Augusta, GA 30904; Darren Brooks, (706) 738-8929



**Dalton Raceway**, 2300 Chattanooga Rd., Dalton, GA 30720; (404) 226-6699



**Echeconnee Superspeedway**, 2149 Richardson Dr., Macon, GA 31206; Andy Thompson/Cliff Kline (912) 788-8731 or 788-7282



**Georgia Hobby Center**, 112 Kenwood Rd., Fayetteville, GA 30214; (404) 460-1753



**Good Life City Raceway**, 6606 Newton Rd., Albany, GA 31707; (912) 888-2515



**Lake Mayer Raceway**, 1 Melinda, Savannah, GA 31460; Phil Hurd, (912) 355-6033



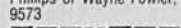
**PDQ Raceway & Hobbies**, 341 Senoia Rd., Peachtree City, GA 30269; Richard Burdett, (404) 631-1788



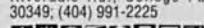
**The Racer's Edge**, 1530 Hwy. 19 N., Thomaston, GA 30286; Roger or Mark Walls, (706) 648-2637, (706) 648-6534



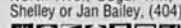
**Sandy Cross Speedway**, Rt. 1, Box 1073, Royston, GA 30662; Morris Phillips or Wayne Fowler, (404) 245-9573



**Silver Wings Raceway**, 5611 Riverdale Rd., College Park, GA 30349; (404) 991-2225



**Sugar Bowl R/C Speedway**, 5272 North Ave., Sugar Hill, GA 30051; Shelley or Jan Bailey, (404) 945-6709



## HAWAII

**K/M's Hobbies**, 2305 Jasmine St., Honolulu, HI 76816; George Mirikirana, (808) 757-7135

**Koha R/C Racing**, 74-5563 Kaiwi St., Kailua-Kona, HI 96740; Hobby-Tronics, (808) 329-3072



**R/C Motorsports Hawaii**, 98-029 Hekaha St., Aiea, HI 96701; Lane Petrich, (808) 487-5155



## IDAHO

**Capital Dirt Burners**, 2440 Menlo Dr., Boise, ID 83702; Jim (208) 383-0426 or Mike (208) 345-3906



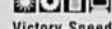
**Dapco Hobbies**, 2211 Garrett Way, Pocatello, ID 83201; Pat Talbert, (208) 233-8163



**Falls Hobbies & R/C Raceway**, 1515 Northgate Mile, Idaho Falls, ID 83401; (208) 529-8650



**MARA**, 1229 Burrell, Lewiston, ID 83501; Rich Law, (208) 743-4141



**Victory Speedway**, 5416 Anna St., Boise, ID 83705; Bruce Wallace, (208) 343-3113



## ILLINOIS

**Adam's Blast Track**, RR 1, Box 370, Ashmore, IL 61912; John Deffenbaugh, (217) 349-8447



**AJ's Raceway**, Kesslinger Road, DeKalb, IL 60115; A.J. Schultz, (815) 756-2772



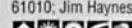
**Ameri-Trac**, R3, Box 242, Mattoon, IL 61938; (217) 234-8707



**Badlands II**, 320 W. Jackson St., Vandalia, IL 62471; (618) 283-2913



**BARR**, 809 River Dr., Byron, IL 61010; Jim Haynes, (815) 234-5615



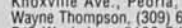
**C&R Hobbies**, 39 E. Jones, Mifflord, IL 60953; Ray Craighead, (815) 889-4073



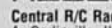
**Centennial Park/LeMont Dirt Burners**, 7827 Rohrer Dr., Downers Grove, IL 60516; Scott Moravik, (708) 968-6411



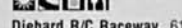
**Central Illinois R/C Car Club**, 7015 N. Knoxville Ave., Peoria, IL 61614; Wayne Thompson, (309) 693-8885 or R/C Workshop, 3100 S.W. Adams, Peoria, IL 61605; (309) 673-4860



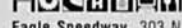
**Central R/C Raceway**, RR 2, Box 51-A, Carlinville, IL 62626; Tim Stewart, (217) 854-9718 or Don Rice, (217) 854-3785



**Diehard R/C Raceway**, 618 N. Main, Kewanee, IL 61443; Dick Jennings, (309) 854-0701



**Eagle Speedway**, 303 N. Plum St., Pontiac, IL 61764; Joe or Vickie Bachman, (815) 842-1738





**Lisle Community Park Raceway**, 1825 Short St., Lisle, IL 60532; Jim Bernick, (708) 416-6944



**Machesney Park**, 1220 Shappert Dr., Machesney Park, IL 61115; (815) 282-1311



**Magnum R/C Speedway**, RR #2, Box 399, Danville, IL 61832; Terry & Nancy Dines, (217) 446-2472



**Marty's R/C Hobby**, 1335 E. Broadway, Bradley, IL 60915; Gail or Marty, (815) 933-8441



**Mercer Co. R/C Off-Road**, RR 3 Box 259, Milan, IL 61264; Jamie Wagal, (309) 534-8324



**Midwest Hobby Trax**, 114 Kirkland Cr., Unit A, Oswego, IL 60543; Duane Pierson or John Koonce, (708) 978-1842



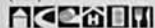
**Monroe R/C Raceway**, 26049 Ridgeland Ave., Monroe, IL 60449; Roy or Roberta Moody, (708) 534-2422 (track), (708) 799-5597



**Peoria R/C Raceway**, 518 Hillsdale Ave., Peoria, IL 61604; Ray Tigue, (309) 672-1780



**Precision Speedway**, 3919 17 St., East Moline, IL 61224; Dan Kennedy, (309) 796-2226



**The R/C Track**, 15022 S. Artesian, Harvey, IL 60426; Edmund Johnson, (708) 331-4079



**Radio Active Raceways**, 751 N. Bolingbrook Dr., #15, Bolingbrook, IL 60440; Jim, (708) 759-7557



**Redline Raceway**, 921 Harding, Calumet City, IL 60409; (708) 862-8181



**Rick's R/C Raceway**, 122 W. 12th St., Streator, IL 61364; Rick Wallace, (815) 673-1870



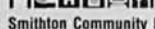
**Rockford Scale Raceway**, 6900 N. 2nd St., Machesney Park, IL 61111; (815) 765-2970



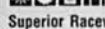
**SIRCAR Raceway**, 1200 N. Marion, Carbondale, IL 62901; (618) 549-5885



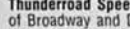
**Slot Wing Hobbies Race Place**, 1615 W. Springfield, Champaign, IL 61821; (217) 359-1920



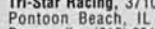
**Smithton Community Park**, P.O. Box 8152, Belleville, IL 62221; (618) 236-7569



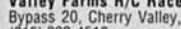
**Superior Raceway**, 1706 W. Bradley, Champaign, IL 61821; (217) 359-8073



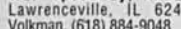
**Thunderbolt Speedway**, Intersection of Broadway and Division, Coal City, IL 60416; (815) 634-8050



**Tri-Star Racing**, 3710 B. Hwy. 111, Pontoon Beach, IL 62040; Skip Bornmueller, (618) 931-1206



**Valley Farms R/C Raceway**, 706 Bypass 20, Cherry Valley, IL 61016; (815) 332-4516



**WEP Speedway**, RR#2 Box 44, Lawrenceville, IL 62439; Brad Volkman, (618) 884-9048



**West Suburban R/C Raceway**, 44 S. Villa Ave., Villa Park, IL 60181; Calvin Bruce, (708) 834-7223



## INDIANA

**Autograph/Race World**, 231 Pendleton Ave., Pendleton, IN 46064; Sam Mudd, (317) 778-3386



**BJ's Riverside Raceway**, 265 S. Clay St., Jasper, IN 47546; Joe Lorey, (812) 482-3484



**Blaze'n Race'n**, P.O. Box 6, Hamlet, IN 46532; James Berndt, (219) 867-1324



**Boone County Raceway**, 1300 E. 100 S. Rd., Lebanon, IN 46052; Jerri Moss or Allan Loper, (317) 482-4827



**CC Hobby & Speedway**, RR 1, Box 68, Francesville, IN 47946; (219) 567-2447



**Classic Hobbies**, 420 E. Commercial, Lowell, IN 46356; David Scheffler, (219) 696-0649



**Clayhorn II**, RR 4, Box 3521, Veedsburg, IN 47987; Mike Rogers, (317) 295-2582



**County Line R/C**, 2333 W. State Rd. 38, Sheridan, IN 46069; Greg Welch, (317) 758-6393



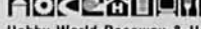
**Elliott's R/C Raceway**, 2140 North Plate, Kokomo, IN 46901; (317) 452-0163



**Hobby Barn Raceway**, 1950 Springhill, Terre Haute, IN 47802; 9694; (812) 299-5773



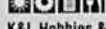
**Hobby Masters**, 8501 Bash, Indianapolis, IN 46250; Jim Price, (317) 576-1961



**Hobby World Raceway & Hobbies**, 1508 N. Harlan, Evansville, IN 47711; Jeff Wassman, (812) 421-1100



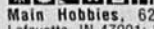
**Jam Raceway**, 261 E. Main St., Bunker Hill, IN 46914; Jami Casavan, (317) 689-7507



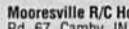
**K&L Hobbies & Raceway**, 3275 North 525W, LaPorte, IN 46350; (219) 324-0353



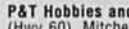
**Kokomo Hobby & Radio Raceway**, 1108 E. Markland, Kokomo, IN 46901; (317) 457-5060



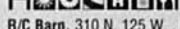
**Main Hobbies**, 625 Columbia, Lafayette, IN 47901; Randy Palmer, (317) 742-2045



**Mooreville R/C Hobby**, 9201 S. State Rd. 67, Camby, IN 46113; (317) 831-8877



**P&T Hobbies and Raceway**, RR 2 (Hwy 60), Mitchell, IN 47446; Paul Weber, Tom Logsdon, (812) 849-6666; fax, (812) 332-0018



**R/C Barn**, 310 N. 125 W., Monroe, IN 46772; Mark Lengerich, (219) 692-6600



**R/C World of Indiana**, RR #2, Box 335, Lynn, IN 47355; (317) 874-2464



**R/C Zone & Raceway**, 6380 W. 34th St., Indianapolis, IN 46224; Russ or Greg, (317) 290-0067



**Race St. Raceway & Hobby**, 11261/2 Race St., New Castle, IN 47362; John or Nancy Strong, (317) 521-4888



**Raceway Park**, 919 E. McKinley, Mishawaka, IN 46545; Bob Bean, (219) 256-1020



**Rimfire Raceway and Hobby Shop**, 8 Wood Ct., Hebron, IN 46341; Sandra Eaton, (219) 996-6288/shop, 987-2803/home



**The Rink**, 7900 Whitcomb, Merrillville, IN 46410; Don Reiner, (219) 769-8113



## IOWA

**Barnyard Raceway**, RR1, Box 243, Plainfield, IA 50666; Fred Good, (319) 276-4825



**Dubuque R/C Speedway**, Dubuque County Fairgrounds, Dubuque, IA 52001; Paul Conlon, (319) 556-2736



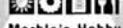
**Hobby Haven Raceway**, 7672 Hickman Rd., Des Moines, IA 50322; Brian Oakley, (515) 276-8785



**Kodiak Race Track**, Box 78, Okoboji, IA 51355; Brad or Dave, (712) 332-7982



**M&M Racetrack**, 2434 Pilgrim Path, Oskaloosa, IA 52577; (515) 673-6265



**Marble's Hobby Supply**, 4685 SE 40th St., Des Moines, IA 50320; Rick Marble, (515) 262-7507



**Mr. Car Raceway**, Central Iowa Fairgrounds, Marshalltown, IA 50158; (515) 483-2234



**North Park R/C Speedway**, 805 S. Jerome, Algona, IA 50511; (515) 295-9352



**Plymouth County R/C Speedway**, 4th Ave. NE (Plymouth County Fairgrounds), LeMars, IA 51031; (712) 546-8788 or 546-9522



**Power House Racing**, 1200 S. Division St., Creston, IA 50801; (515) 782-4582 or 782-4174



**Rotunda Raceway**, 101 Bass, RR 1, Box 155A, Storm Lake, IA 50588; (712) 732-4555



**Sibley Raceway**, Osceola County Fairgrounds, Sibley, IA 51249; Allen Reck, (712) 754-2604



**Southwest Iowa Hobbies 'n' R/C Raceway**, 204 S. Broadway, Red Oak, IA 51566; Debbie Johnson (712) 623-5513



**Spenser R/C Raceway**, 419 Grand Ave., Spenser, IA 51301; Steve or Mike, (712) 262-2603 or -7864



**Team Johnson Speedway**, Jct. Hwy. 34 & 406, West Burlington, IA 52655; (319) 753-0753



## KANSAS

**Chad's R/C World & Raceway**, 217 Brownie Ave., P.O. Box 76, Scranton, KS 66537; (913) 793-2313



**Ebersole R/C Superspeedway**, 11417 W. Hwy. 54, Wichita, KS 67209; Len Ebersole, (316) 722-8888



**R/C Superdome & TQ Pro Shop**, 14 E. Ave. A, Hutchinson, KS 67501; (316) 665-6633



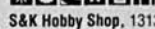
**R/C World Raceway**, 217 Brownie Ave., Scranton, KS 66537; Corky or Pam Green, (913) 793-2313



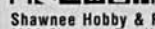
**R&R R/C Raceway**, 900 N. Santa Fe, Salina, KS 67401; (913) 823-7062



**RCRC Raceway**, 507 N. 4th, Atwood, KS 67730; Bob Dunker, (913) 626-3261



**S&K Hobby Shop**, 1313 S.W. 21st St., Topeka, KS 66604; Joe Knernschild, (913) 357-0104



**Shawnee Hobby & R/C Raceway**, 4603 Shawnee Dr., Kansas City, KS 66106; Bill Pugh, (913) 384-3211



**The Speed Zone**, 12809 Pflumm, Olathe, KS 66062; Brian Bierman, (913) 829-5287



## KENTUCKY

**A&J Raceway**, Hc-64, Box 322-A, Lily, KY 40740; Al Smith, (606) 523-9710



**Bluegrass Int'l/Perry's R/C Hobbies**, 214 Globe St., Radcliff, KY 40160; William Perry, (502) 351-1842



**Checkered Flag Raceway**, 1790 Bryan Station Rd., Lexington, KY 40505; Billy or Jay, (606) 293-6825



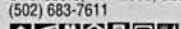
**East Kentucky Hobby Raceway**, Hwy. 15, Garner Mt., Isom, KY 41824; (606) 633-8567



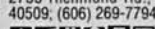
**Fast Lane Hobbies & Raceway**, 281 Porter Pike, Bowling Green, KY 42101; Greg Bailey, (502) 782-2419



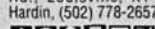
**Hobby Center Inc.**, 2106 Triplett St., Owensboro, KY 42303; Bobby Howell, (502) 683-7611



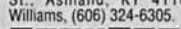
**The Lexington Autodrome Raceway**, 2753 Richmond Rd., Lexington, KY 40509; (606) 269-7794



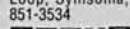
**ProTrak R/C Racing**, 3451 Cane Run Rd., Louisville, KY 40211; Tony Hardin, (502) 778-2657



**Tri-City R/C Raceway**, 2420 Riggall St., Ashland, KY 41101; Eddie Williams, (606) 324-6305



**West Kentucky R/C Cars**, 45 Hawkins Loop, Symsonia, KY 42082; (502) 851-3534



## LOUISIANA

**Acadiana R/C Hobbies & Raceway**, 120 Toledo Dr., Lafayette, LA 70506; (318) 235-5825



**Baha Raceways**, 2225 Hickory Ave., Harahan, LA 70123; Bruce or Dan Rodriguez, (504) 737-6988



**Cajun R/C Raceway**, Rt. 2, Box 288 (Hwy. 343, Bosco) Church Point, LA 70525; Ray Thibodeaux, (318) 873-3855



**Cajun R/C Raceway**, 110 A Darbonne, Sulphur, LA 70663; Sandy Thibodeaux, (318) 527-9129



**Loupe's R/C**, 888A Madeline Ct., Baton Rouge, LA 70815; Mark Loupe, (504) 927-6275



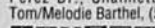
**Red Dirt Raceway**, 324 Pitkin Rd., Leesville, LA 71446; CJ Hall, (318) 535-9238



**Red River R/C**, 3232 East 70th, Shreveport, LA 71105; David Gray or Sean Cleveland, (318) 747-1863 or 868-6932



**T&M Pro Hobbies**, 9212 W. Judge Perez Dr., Chalmette, LA 70043; Tom/Melodie Barthel, (504) 271-3111



## MAINE

**Central Maine R/C Speedway**, 18 Lithgow St., Winslow, ME 04901; David Prescott, (207) 877-2232



**Clay Bowl R/C Hobbies**, P.O. Box 61, Greene, ME 04236; Pat Cap, (207) 946-5003



**Sabattus R/C Raceway**, 247 Gardiner Rd., Sabattus, ME 04280; Larry Desrosiers, (207) 225-2027



**Hobbies Plus**

# Track Directory

**40 Speedway.** 933 Pulaski Hwy., Havre de Grace, MD 21078; Doug or Vince, (410) 538-3135 or 939-3588



**Friendship Off-Road Racers,** 1531 Florida Ave., Severn, MD 21144; (301) 551-3050



**Fruitland Indoor Race Center,** 203 N. Fruitland Blvd., Fruitland, MD 21826; Thomas Duncan, (410) 543-4329



**Radio Control Cars Inc.,** 13600-A Annapolis, Bowie, MD 20715; Tony Anderson, (301) 262-1444



**Suzie Goose Hobbies,** 718 E. Gude Dr., Rockville, MD 20850; (301) 279-2966



**The Track,** 16806 Oakmont Ave., Gaithersburg, MD 20877; Mimi Wong, (301) 417-9630



**Wolfand Hobbies and Raceway,** 2072 Crain Hwy., Waldorf, MD 20601; Perry Pritchard, (301) 870-0293



## MASSACHUSETTS

**Archer's Lane R/C Raceway,** 118 Washington St. (Rt. 1), S. Attleboro, MA 02730; (508) 399-6762



**C&C Hobby & Raceway,** 562 Russells Mills Rd., S. Dartmouth, MA 02748; (508) 997-4131



**Centerline Hobbies,** 167 Corporation Rd., Hyannis, MA 02601; (508) 771-1244



**CKS Raceway,** 46 Wilbraham St., Palmer, MA 01069; (413) 283-2260



**Hi-Tech Hobbies,** 1681 Broadway (Rt. 138), Raynham, MA 02767; Ruben, (508) 880-5373



**Megadrome Raceway/BRCCR,** N. Adams Plaza, Rt. 8, North Adams, MA 01247; Gordon, (413) 663-9593; Richard, (413) 445-4777; Warren, (413) 442-2566



**Mike's Speedway,** 1210 Federal St. (Rt. 9), Belchertown, MA 01035; Steve or Mike, (413) 253-9312



**Naytrix Raceway,** Holmes Rd., Pittsfield, MA 01201; Rick Welch or Nate Zuckerman (413) 443-2488 or 443-9886



**North East Auto Racers,** P.O. Box 12, Merrimac, MA 01860; George Denault, (508) 346-8456



**R/C Hobbies & Speedway,** 16 Howland Rd., Fairhaven, MA 02719; Joe Alfonso, (508) 991-5040



**West St. Hobbies,** 114C Main St., Medway, MA 02053; (508) 533-1231



## MICHIGAN

**Baja Bayou Off-Road Raceway,** 5313 W 22 Mile Rd., Tustin, MI 49688; Mike Langworthy, (616) 829-3447



**Can-Am Hobbies Speedway Park,** 1152 Gratiot, Marysville, MI 48040; Don Grinde, (313) 364-3338



**Cereal City R/C Off-Roaders,** 2000 E. Columbia Ave., Battle Creek, MI 49015; (616) 963-2506



**Chatter Box Racing,** P.O. Box 164, Old State Rd., Central Lake, MI 49622; Bill Altergott, (616) 544-9829



**DNR Speedways,** 4630 Hill Rd., Harbor Beach, MI 48441; Kelcey, (517) 479-6097



**Doug's Dirt Way,** 5210 Colby Rd., Owosso, MI 48867; Doug Conn, (517) 723-3368



**Elmer's R/C Speedway,** 2683 Lakeshore Dr., Niles, MI 49120; Randy or Kristi Easton, (616) 683-7380



**Fun Tyme High-Banked Oval,** Fun Tyme Adventure Park, 6295 E. Saginaw Hwy., Grand Ledge, MI 48837; (517) 655-5503



**Harrison International Speedway,** 3519 N. Clare Ave., Harrison, MI 48625; John Starkweather, (517) 539-2921



**JJ's R/C Speedshop,** 5645 E. 13 Mile Rd., Warren, MI 48092; (313) 977-0420



**JT Superspeedway,** 825 Golden Ave., Battle Creek, MI 49017; Jerry or Dan, (616) 965-0571



**Larry's Performance R/C's,** 3430 Highland Rd., Waterford, MI 48328; Larry Rossi, (313) 683-5529



**Ludington R/C Raceway,** 1483 N. Dennis Rd., Ludington, MI 49431; (616) 843-4654



**Mason County R/C Car Track,** West Shore Community College, 611 N. Washington Ave., Ludington, MI 49431; Scottsville, MI 49454; (616) 843-8553 or 843-4837



**Mike's Raceway,** 7 North St., Yale, MI 48097; Mike Huber, (313) 387-4308



**Newberry R/C Raceway,** RR 3 Box 2860, McMillan, MI 49853; Frank, (517) 773-5711



**Pointe R/C,** 2119 Summerton Rd., Mt. Pleasant, MI 48858; (906) 293-3044



**R&B Raceways,** P.O. Box 24, St. Louis, MI 48880; Russ or Brian Weaver, (517) 681-3688 or (517) 463-1886



**R&L Hobbies,** 9782 Portage Rd., Kalamazoo, MI 49002; Rex Simpson, (616) 323-3686, fax (616) 329-1744



**Rad & Bad Raceway,** 810 S. Martin Rd., Gladwin, MI 48624; Mick Bushong, (517) 426-4373



**Rider's Superspeedway,** 42040 Koppnick, Ste. 400, Canton, MI 48187; Brent Martin, (313) 451-5599



**Rider's Superspeedway,** 4415 S. Westledge, Kalamazoo, MI 49008; Ken Penn (616) 349-2666



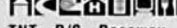
**Sugar Ray's Raceway,** 1948 Ford, Wyandotte, MI 48192; Ray or Kathy, (313) 281-3520



**T/A Raceway,** 119 N. Michigan, Big Rapids, MI 49307; Harvey, (616) 796-3217



**Thumb Raceway,** 3441 S. Main St., Marlette, MI 48453; (517) 635-7848



**TNT R/C Raceway,** 130 W. Washington St., Marquette, MI 49855; Gregory Berg, (906) 228-4098



**USA Raceways,** 6803 Dixie Hwy., Bridgeport, MI 48722; (517) 777-7USA



**Village Hobbies-n-Crafts,** 195 N. Elm, Hesperia, MI 49421; Alan or Fran, (616) 854-1374



**Westside R/C Raceway,** 4335 Lake Michigan Dr., Grand Rapids, MI 49504; George Orikowski, (616) 791-9902. (Open May through August.)



## MINNESOTA

**ABC Raceway,** 120 2nd St. NW, Pipestone, MN 56164; Ross Lange, (507) 825-5065



**Cason Sport & Hobby,** 312 N. Bdv., Crookston, MN 56716; Caesar Kaiser, (218) 281-6665



**Dr. Skate's R/C Raceway,** Frontage Road, La Cresent, MN 54601; Gary Behrens, (608) 788-6141



**Greater Minnesota Rac'n Place,** 3302 Southway Dr., St. Cloud, MN 56301; Jon Jackson, (612) 252-9768



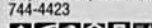
**Min-E-Golf & Hobby,** 9100 Park Ave., Elk River, MN 55330; (612) 441-8365



**The PBR Off-Road Rally,** 721 Cedar Ave., Hector, MN 55342; Philip Zempel, (812) 848-2129



**Range Racing World, Inc.,** 412 Jones St., Eveleth, MN 55734; Bill, (218) 744-4423



**Southside Speedway,** 2241 Marion Rd., SE, Rochester, MN 55904; Kevin, (507) 281-3233



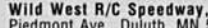
**Squid's R/C Autos,** 924 Main Avenue, Moorhead, MN 56560; Jeff Greenwell, (218) 233-3554



**Trackside Racing,** 2300 Myrtle Ave., St. Paul, MN 55114; Winton Oftele, (612) 644-3424



**Wild West R/C Speedway,** 2822 Piedmont Ave., Duluth, MN 55811; Roger Deloach, (218) 727-6248



## MISSISSIPPI

**Crossroads Raceway,** 904 Cass St., Corinth, MS 38834; (601) 287-2110



**Dixieland R/C Speedway,** 2535 Tabernacle Rd., Columbus, MS 39702; Jeffrey Alvey, (601) 328-9429



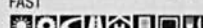
**Fast Freddy's Raceway,** 20390 Hwy. 49, Saucier, MS 39574; Mark Payne, (601) 832-0315



**Joe McFaden Hobbies,** 1619 51st Ave., Meridian, MS 39307; Joe McFaden, (601) 483-7000



**Small Cars Unlimited,** 820 Cooper Rd., Jackson, MS 39212; (601) 372-FAST



## MISSOURI

**All Seasons Hobby,** 152 O'Fallon Plaza, O'Fallon, MO 63366; Bob Daniels, (314) 281-8767



**ARC Raceway,** 109 South High St., Jackson, MO 63755; Burt, (314) 243-1371



**Blue Speedway,** 12019 E. 47th St., Kansas City, MO 64133; Mark Randol, (816) 358-0238



**Doug's Hobbies,** 5221 Veil of Tears, Jefferson City, MO 65109; (314) 893-5861



**Fast Trax Racing Assoc.,** mailing: 206 N. Water, Nixa, MO 65714; track: 318 Boonville, Springfield, MO 65082; Juan Montell, (417) 725-4337



**Harrisonville Hobby Shop & Raceway,** 2301 S. Commercial, Harrisonville, MO 64701; Richard Taylor, (816) 887-3055



**Hobbies 'n' Stuff Raceway,** 102 W. Pearce Blvd., Wentzville, MO 63385; John Gerhardt, (314) 327-6006



**Lafayette Riverside Raceway,** P.O. Box 9663, Marshall Rd., Kirkwood, MO 63122; Don Laningham, (314) 966-8912



**Owensville Raceway, Hobby Shop & More,** 115 N. First St., Owensville, MO 65066; Mike Brune, (314) 764-3461



**Pevely R/C Raceway,** 2199 Meadow, Barhart, MO 63012; Jerry Benz, (314) 464-8627



**S&P Performance Shop,** 5383 Highway "N," St. Charles, MO 63304; Paul Lund, (314) 447-5252



**Suppenbach Winter Racing,** Route 5, Box 66, Pleasant Hill, MO 64080; Larry Suppenbach, (816) 987-5828



## MONTANA

**Bozeman R/C Powerhouse Track,** west side of the Main Mall, Bozeman, MT 59715; (406) 586-6461



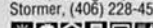
**Garden City Raceway,** 118851/2 Hwy. 93, Lolo, MT 59847; Dave Erickson, (406) 273-2776



**Magic City R/C Raceway,** 14th St. W. & Central Ave., Billings, MT 59101; (406) 259-9004



**Stormer Raceway,** 23 High Speed Road, Glasgow, MT 59230; Mike Stormer, (406) 228-4569



## NEBRASKA

**Hobby Town USA,** Park Island Square, 3537 W. 13th St., Grand Island, NE 68803; Ed Conroy, (308) 382-3451



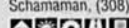
**Mr. Bill's,** 450 West 2nd St., Hastings, NE 68901; Bill J. Ries, (402) 462-4865



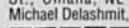
**Over the Wall Gang,** Higiroadbee Speedway, 401 Market Pl., Norfolk, NE 68701; Matt Moeller, (402) 379-0879



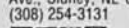
**RACE Raceway,** 100757 Rd. J, Mitchell, NE 68107; Randy Schamaman, (308) 623-1490



**The Salvation Army,** 4032 Harrison St., Omaha, NE 68147-1012; Lt. Michael Delashmit, (402) 634-3414

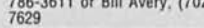


**Sidney R/C Oval Racers,** 932 10th Ave., Sidney, NE 68162; Gale Talich, (308) 254-3131



## NEVADA

**Little City Hobbies Raceway,** 640 Kuenzli, Reno, NV 89503; shop, (702) 786-3611 or Bill Avery, (702) 358-7629



**Radio Controlled Race World,** 905 So. Rock Blvd., Sparks, NV 89431; James or Barbara Balough, (702) 356-2882



**R/C Fever,** 3580 Polaris, Suite 2, Las Vegas, NV 89103; Jim or Darin, (702) 367-RACE



**Silverbowl Speedway,** 7274 Hardtack Cir., Las Vegas, NV 89119; Mike, (702) 896-3577

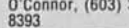


**Western R/C,** 6404 Richmar, Las Vegas, NV 89139; Randy Grigg or Mitch Strete, (702) 897-7227

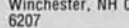


## NEW HAMPSHIRE

**Fastracker Club,** 520 Washington St., Keene, NH 03431; Bill Phillips or John O'Connor, (603) 352-0811 or 357-8393



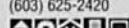
**4-K Racing,** 100 Warwick Rd., Winchester, NH 03470; (603) 239-6207



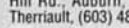
**Hobby Etc.,** Heritage Place, Rt. 101A, Amherst, NH 03031; (603) 595-8549



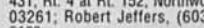
**Hooksett Hobby Raceway,** 1328 Hooksett Rd., Hooksett, NH 03106; (603) 625-2420



**NE Hobbies R/C Raceway,** 49 Eaton Hill Rd., Auburn, NH 03032; Chuck Theriault, (603) 483-2274



**Robert's Railroad & Hobbies,** Box 431, Rt. 4 at Rt. 152, Northwood, NH 03261; Robert Jeffers, (603) 942-5193





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**PRO-LINE****PRO-LINE  
THUNDERS INTO 1994!**

*Pro-Line* tires had a great year in 1993, proving to the world that to win races, you must run the best tires available. So, it should come as no surprise that the season opener for off-road became another outright victory for *Pro-Line* XTR tires.



**Pro-90 Mini-Pin**  
(stock no. 8090)

The Winter Championship races in Florida are traditionally the most important off-road event of the racing season. These races set the pace for the rest of the year, and for car or equipment manufacturers, it is a major indication of how well the rest of your season will run. *Pro-Line* XTR tires were the choice of Masami Hirosaka, who dominated the 2WD Modified class, setting the fast time TQ and crushing the field to take the win. His tire choice was *Pro-Line's* Pro-83 "Flat Fuzzie" (stock no. 8083) in

the now-famous XTR compound. The selection of a *Pro-Line* tire was flawless, as another seven drivers in the A-Main also mounted *Pro-Line* tires on their cars. How's that for getting the popular vote?

In the 4WD class, the story of getting the popular vote was repeated, as the top qualifier and finisher Masami Hirosaka pounded across the finish line on *Pro-Line* XTR compound tires. The most popular combination was a set of *Pro-Line* Pro-83 "Flat Fuzzies" for the rear tires, and Pro-135 4WD "Front Fuzzies" (stock no. 8135) for the front. A deadly combination for traction.

Rounding out the racing event were the trucks. Mark Pavidis was the man to beat. His choice of *Pro-Line* tires was the ticket to a TQ position, as well as a convincing win in the A-Main. Riding on a set of Pro-90 Mini-Pin rear tires (stock no. 8090) and Pro-65 front tires (stock no. 8065), Mark was able to keep the hammer down, all the way to the checkered flag! He had lots of company along the way, as the next eight finishers also mounted up *Pro-Line* XTR compound tires.

*Pro-Line* continues to be the dominant force in traction for off-road competition. More drivers choose *Pro-Line* tires than any other brand, and for a good reason: *winning!* *Pro-Line* also provides you with the best value in tires. The XTR -compound tires come with free foam inserts (as applicable). If you race to win, then see your local hobby dealer about getting the best traction value for the money.

*Start out your racing season with the edge...  
the Winning Edge of Pro-Line tires!*

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**Family Hobbies Raceway**, NW Blvd. & Weymouth Rd., Vineland, NJ 08630; Linda Vogel, (609) 696-5790



**Golden Hobbies & Crafts**, 415 Erial Rd., Pine Hill, NJ 08021; (609) 782-1222



**Hackettstown Family Skating Center**, 13 Rte. 57, Hackettstown, NJ 07840; Bob Powers, (908) 852-8726



**LBRA Track**, 392 Warburton Pl., Long Branch, NJ 07740; (908) 222-5122



**Parlor Hobbies**, 34 Broad St., Matawan, NJ 07747; Charlie Roder, (908) 566-3158



**Pit Stop Dragway**, Campus Rd., Totowa, NJ 07512; Kimberly Frank, (201) 942-5955



**Pixley International Speedway**, 763 Peters Dr., P.O. Box 189, Martinsville, NJ 08836; Richard Toole, (908) 560-0399



**The Race Place**, 1151 Hwy. 33, Farmingdale, NJ 07731; John Fary, (908) 938-5215



**Ricky G's Raceway**, 2208A Hamilton Blvd., South Plainfield, NJ 07080; (908) 753-1518



**S&M Speedway**, 4 Field Rd., Bedminster, NJ 07921; Lee Spano, (908) 234-2750



**Spennell Speedway**, 2301 Rte. 9 North, Great American Flea Market, Howell, NJ 07731; Mitch, (908) 577-9191



**Truck Challenge**, 1162 Rt. 202-206 N., Bridgewater, NJ 08807; Michael Gill, (908) 658-9616



**Zeppelin Hobbies**, 92 Rt. 23N, Riverdale, NJ 07457; Lou Ballini, (201) 831-7717

**NEW MEXICO**

**Roswell R/C Raceway**, 1004 N. Greenwood, Roswell, NM 88201; Larry Jumper, (505) 623-6693



**TRC Race Park**, 1303 E. 8th St., Truth or Consequences, NM 87901; Gary Whitehead, (505) 894-3211

**NEW YORK**

**A&C Speedworld**, 1930 Lakeville Avon Rd., Avon, NY 14414; (716) 226-2460



**A&D's FastTracks**, 1000 N. Main St., Brewster, NY 10509; (914) 279-2065



**A&S Race Center & Hobbies**, 120 Cayuga St., Canalview Mall, Fulton, NY 13069; (315) 598-2772



**Adirondack International**, 66 Elm St., Warrensburg, NY 12885; Matt or Jake Wiedman (518) 623-9611



**Aidon Speedway**, 100 Castle St., Geneva, NY 14456; (315) 789-8343



**Brockport Speedway**, 6000 Sweden Walker Rd., Brockport, NY 14420; Gil & Betty Glidden, (716) 637-6224



**Brownie's Pro & Sport Hobbies**, 124 Bennett St., Staten Island, NY 10302-1426; John Brown, (718) 727-2194



**Cars, R/C & Guitars**, 4360 Seneca St., West Seneca, NY 14224; (716) 674-0905



**Capital District R/C Racers**, 27 Venus Dr., Albany, NY 12205; Keith Green, (518) 783-7859



**Catskill Regional R/C Raceway**, Glasco Turnpike, Mt. Marion, NY 12456; (914) 339-3294



**Central New York R/C Auto Racers**, Martin St., P.O. Box 116, Rome, NY 13440; John Orr, (315) 336-5140



**Chippmunk Hill R/C Speedway**, 217 Pine St., Theresa, NY 13961; Ted House, (315) 628-5065



**Creekside R/C Raceway Park**, 5242 Route 228, Trumansburg, NY 14886; Lawrence C. Updike, (607) 387-5513 after 6 pm.



**D&J's Speedway**, 94 Maple St., Croton-on-Hudson, NY 10520; Dan Spatta, (914) 271-5797



**Daytona Miniature Raceway**, 59 Lamar St., W. Babylon, NY 11704; (516) 491-4041



**Dirt Track**, 17 Fairway Dr., Manorville, NY 11949; Billy Wroblewski, (516) 878-0737



**East Coast Barn Stormers**, MD #1 Old Oxford Rd., Chester, NY 10918; Michael or Lou, (914) 469-5883



**Enjoyable Hobbies and Raceway**, 260 Ronkonkoma Ave., Lake Ronkonkoma, NY 11779; (510) 588-6994



**Foothills R/C Racing Club**, RD 1, Box 1156, Maryland, NY 12116; Steve Valentine, (607) 433-1860 or 432-7508



**Gamlen's R/C Motor Speedway**, 8453 Rt. 111, P.O. Box 1430, Cicero, NY 13039; Mike Woods, (315) 699-2991



**HobbyTown USA**, 629 Plank Rd., Clifton Park, NY 12065; Larry Burwell, (518) 383-1215



**Jerry's Raceway**, 111 S. Applegate Rd., Ithaca, NY 14850; Jerry and Lori Achilles, (607) 277-0940



**Latest Hobbies & Raceway**, 781 Rt. 25A, Rocky Point, NY 11778; Joe Jolin, (516) 929-8844, fax, (516) 929-5002



**LI 1/4-Scale Racers**, 63 Horton Dr., Huntington Station, NY 11746; (516) 351-5384



**Mattituck Hobbies & R/C Raceway**, 7335 Main Rd., Mattituck, NY 11952; Wally, (516) 298-2020



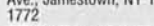
**Norwood Hobbies Raceway**, 2-4 S. Main St., Norwood, NY 13668; Tom Jarvis, (315) 353-6621



**Performance Hobbies Raceway**, 205 North Ave., Webster, NY 14580; Anthony Cenzi, (716) 621-1274



**Performance Plus R/C Speedway**, The Hobby House, 1141/2 Jones & Gifford Ave., Jamestown, NY 14701; (716) 488-1772



**R/C Competition Corner**, K-Mart Plaza, Mattydale, NY 13211; (315) 455-8718



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# Track Directory

**R/C Hobbies**, Rt. 49, Box 138, Constantia, NY 13044; Roy Catholi, (315) 623-9536



**R/C World Hobby Center**, 69-57 Juniper Blvd. S., Middle Village, NY 11379; (718) 326-0002



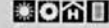
**R&S Hobbies**, 356 Macedon Ct. Rd., Fairport, NY 14502; (716) 425-3722



**Race O Rama**, 44 Sharon Ave., Plattsburgh, NY 12901; James Varno, (518) 562-5442 or 643-2678



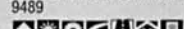
**Rampage R/C**, 27 Fuller Ln., Hyde Park, NY; Brian Walke, (914) 229-2456



**Ransomville R/C Raceway**, 2576 Academy St., Ransomville, NY 14131; Irene Preisch, (716) 791-8310



**Rock River Model Hobbies**, RD 2, Box 297, Rock River Rd., Interlaken, NY 14847; Carl Schmidt, (607) 532-9489



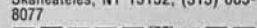
**Schoharie Co. R/C Car Club**, P.O. Box 126, Cobleskill, NY 12043; (518) 234-4600



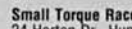
**Seneca R/C**, 2339 Yerkes Rd., Romulus, NY 14541; (315) 789-8343



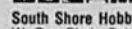
**Skaneateles Raceway & Hobby**, P.O. Box 102, Rt. 20, W. Genesee St., Skaneateles, NY 13152; (315) 685-8077



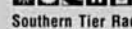
**Small Torque Racers of Long Island**, 24 Horton Dr., Huntington Station, NY 11746; George Franz, (516) 271-1119



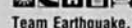
**South Shore Hobby & Raceway**, 311 W. Roe Blvd., Patchogue, NY 11772; Don Hauck, (516) 758-5567



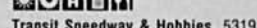
**Southern Tier Raceway & Hobbies**, 88 Paige St., Owego, NY 13827; Chet or Anita Harding, (607) 687-5395



**Team Earthquake**, The Hobby House, 1141/2 Gones & Gifford, Jamestown, NY 14701; (716) 488-1772



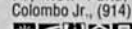
**Transit Speedway & Hobbies**, 5319 Transit Rd., Depew, NY 14043; (716) 684-7368



**Ulster County Speedway**, P.O. Box 71, New Paltz, NY 12561; Joe Colombo Jr., (914) 754-7664



**Wall's Hobby**, 2 Dwight Park Dr., Syracuse, NY 13209; (315) 453-2291



**Western New York R/C Speedway**, 58 Spring St., Cuba, NY 14727; Jason Congdon, (716) 968-3586

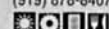


**Whitestone Off-Road Raceway**, 149-50 15th Rd., Whitestone, NY 11357; Whitestone Hobbies, (718) 767-6767



## NORTH CAROLINA

**B-N-B R/C Raceway**, 7805 S. Airazona Dr., Raleigh, NC 27604; Craig Barber, (919) 878-8407



**Badin Shore Raceway**, 1730 Jackson Lake Rd., High Point, NC 27263; Jimmy or Tim Martin, (919) 431-9258



**Big Kids Little Toys**, 407-B Pomona Dr., Greensboro, NC 27407; Joe Stewart, (919) 299-3355



**C&H Raceway**, 1400 N. Cannon Blvd., Kannapolis, NC 28083; Camera & Hobby Shop, (704) 933-5321



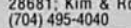
**Cape Fear Speedway**, 207 Harley Rd., Wilmington, NC 28401; Bob Justice, (919) 762-1184



**Carolina R/C Drag Assoc.**, 907-C Warsaw Rd., Clinton, NC 28328; (919) 592-9489



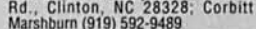
**Carolina Hobbies R/C Raceway**, Route 1, Box 158, Taylorsville, NC 28681; Kim & Roseanne Kulawik, (704) 495-4040



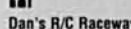
**Clapp's R/C Motor Speedway**, Rt. 4, Box 300A, Siler City, NC 27344; Al Clapp, (919) 663-3198



**Clinton R/C Raceway**, 907-C Warsaw Rd., Clinton, NC 28328; Corbett Marshburn, (919) 592-9489



**Dan's R/C Raceway**, Rt. 4, Box 392A, Conover, NC 28613; Danny Dellinger, (704) 256-8963



**Granite City R/C Raceway**, 192-1 N. Main St., Mt. Airy, NC 27030; (919) 786-1466



**Hi-Performance Hobbies & R/C Raceway**, P.O. Box 320, Earl, NC 28038; Derrell Hollifield, Steve Bliss, (704) 482-4391



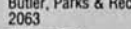
**Hobbies, Etc.**, 5540 Atlantic Springs, Raleigh, NC 27604; Don Asplen, (919) 790-1444



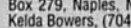
**Hobby Park**, W. Clemmons Rd., Winston-Salem, NC 27103; Dick Butler, Parks & Recreation, (919) 727-2063



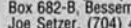
**The Hobby Speedway**, Hwy. 25, P.O. Box 279, Naples, NC 28760; Jerry or Keida Bowers, (704) 684-9814



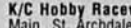
**Joe's Hobby Shop & Raceway**, Rt. 2, Box 682-B, Bessemer City, NC 28016; Joe Setzer, (704) 435-2912 or David Honbarger, (704) 827-7741



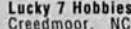
**K/C Hobby Raceway**, 10517-N N. Main St., Archdale, NC 27263; Kirby Cranford, (919) 434-3482



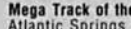
**Lucky 7 Hobbies**, 1757 Hwy. 15, Creedmoor, NC 27522; Eddie Markham, (919) 528-2054



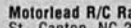
**Mega Track of the Triad**, 5540-105 Atlantic Springs Rd., Raleigh, NC 27604; Don Asplen, (919) 790-1444



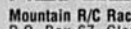
**Motorlead R/C Raceway**, 125 Park St., Canton, NC 28716; (704) 648-7911



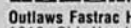
**Mountain R/C Raceway**, Hwy. 107N, P.O. Box 67, Greenville, NC 28736; (704) 743-3709



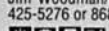
**Outlaws Fastrac Hobbies Raceway**, 1013 Old Hendersonville Hwy., Brevard, NC 28712; Jeff Laws, (704) 885-RACE (7233)



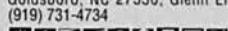
**PC Hobbies**, 143 Industrial Dr., King, NC 27021; Mike Ingles, (919) 983-2514



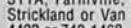
**Ride & Slide R/C Raceway**, 5319 Yaddin Rd., Fayetteville, NC 28303; Jim Woodman/Dave Bazemore, (910) 425-5276 or 868-2079



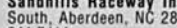
**Rosewood Speedway**, Rt. 5, Box 853, Goldsboro, NC 27530; Glenn Elam, (919) 731-4734



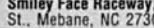
**S&B Speedway & Hobbies**, Rt. 1, Box 311A, Farmville, NC 27828; Ricky Strickland or Van Bibbs, (919) 753-4422 or 749-1468



**Sandhills Raceway Inc.**, US #1 South, Aberdeen, NC 28315; (919) 944-7414



**Smiley Face Raceway**, 120 W. Center St., Mebane, NC 27302; (919) 563-3822



**Speed Performance**, 4121 Lower Moncurd Rd., Sanford, NC 27330; Howard Everett, (919) 774-3843



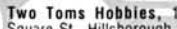
**TLC R/C Raceway**, Rt. 6, Box 321-A, Hwy. 601, Mocksville, NC 27026; (704) 492-7569



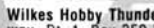
**TNT R/C Raceway**, 707 N. Salisbury Ave., Salisbury, NC 28159; Larry Martin, (704) 633-0647



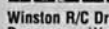
**Two Toms Hobbies**, 155 Boone Square St., Hillsborough, NC 27278; Tom York, (919) 732-6221



**Wilkes Hobby Thundershield Raceway**, Rt. 1, Box 350-B, Wilkesboro, NC 28624; (919) 973-3734



**Winston R/C Drag Series/Hobby Park Dragway**, W. Clemmons Rd., Winston-Salem, NC; Jack Wright, (919) 983-9416



## NORTH DAKOTA

**Crystal Springs Off-Road**, 1200 53 Ave. SW, Minot, ND 58701; (701) 852-9590



**Hacienda Hills Speedway**, 20 Hacienda Hills, Minot, ND 58701; Kenny Duchscherer, (701) 839-4419



**Northern Mini Racers**, P.O. Box 415, Minot, ND 58702; Patrick McWethy, (701) 839-8868



## OHIO

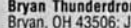
**Aerotech Raceway**, 409 Applegrove Rd., North Canton, OH 44720; (216) 499-1300



**Alcraft's R/C Raceway**, 1370 Custer-Orangeville Rd., Brookfield, OH 44003; (216) 448-1573



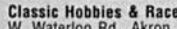
**Bryan Thunderdrome**, Townline Rd., Bryan, OH 43506; Jeff Lehmann, (419) 636-9100



**C/R Hobbies Top Race Track**, 323 Center St., Ashtabula, OH 44004; Virginia Gagat, (216) 992-3833



**Classic Hobbies & Raceway**, 2845 W. Waterloo Rd., Akron, OH 44312; (216) 628-3222



**D&J R/C Raceway**, 801 W. Market St., Orrville, OH 44867; Don Yoder or Mark Nussbaum, (216) 682-4266



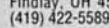
**D&S Hobbies Raceway**, 7701 Crile Rd., Concord, OH 44077; (216) 354-2112



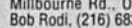
**FFA Speedway**, 1001 Old Columbus Rd., Wooster, OH 44676; Roger Franks, (216) 264-1848



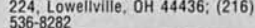
**Flag City Raceway**, 721 Rockwell Ave. (track address: 3772 C.R. 18), Findlay, OH 45840; Ruth Hubbard, (419) 422-5589



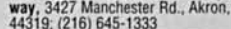
**Golden Bear Hobbies**, 154 N. Millbourne Rd., Orrville, OH 44667; Bob Rodi, (216) 683-1250



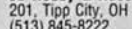
**Hobby Mania Raceway**, 6597 Route 224, Lowellville, OH 44436; (216) 536-8282



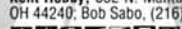
**Innovative Hobbies/Lakeside Speedway**, 3427 Manchester Rd., Akron, OH 44319; (216) 645-1333



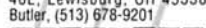
**JB Hobby & Raceway**, 8760 St. Rt. 201, Tipp City, OH 45371; Bob Curtis, (513) 845-8222



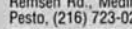
**Kent Hobby**, 832 N. Mantua St., Kent, OH 44240; Bob Sabo, (216) 673-0422



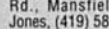
**Lewisburg R/C Raceway**, 395 US Rt. 40E, Lewisburg, OH 45338; Gene Butler, (513) 678-9201



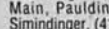
**Medina City R/C Raceway**, 3414 Remsen Rd., Medina, OH 44256; Eric Pesto, (216) 723-0255



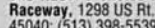
**Midway Racetrack**, 2601 Ashland Rd., Mansfield, OH 44905; Greg Jones, (419) 589-4200



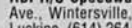
**Paulding R/C Speedway**, 103 N. Main, Paulding, OH 45879; Virgil Simindinger, (419) 238-0633



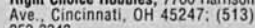
**The Racer's Choice R/C Hobbies & Raceway**, 1298 US Rt. 42, Mason, OH 45040; (513) 398-5539



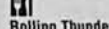
**RBI R/C Speedway**, 110 Springdale Ave., Wintersville, OH 43952; Frank Luckino, (614) 264-9101



**Right Choice Hobbies**, 7760 Harrison Ave., Cincinnati, OH 45247; (513) 353-3343



**Rolling Thunder**, 1945 North Hubbard Rd., North Madison, OH 44057; John Hoylman, (216) 428-4406



**Sleepy Hollow Raceway Park**, 11189 Spear Rd., Concord, OH 44077; Gary Waldhelm, (216) 944-5898



**Steel Valley Hobbies & Raceway**, 157 North Fourth St., Steubenville, OH 43952; Jim Maxwell, (614) 282-3003



**Way Out Hobbies**, 5583 Centerpoint Rd., Georgetown, OH 45121; (513) 375-4984



**Y-City Hobby & Speedway**, 120 S. 6th St., Zanesville, OH 43701; Kevin McKenna, (614) 455-3025



## OKLAHOMA

**Ace Raceway**, 2608-768 Villa Prom. (Shepherd Mall), Oklahoma City, OK 73107; Mike McLish, (405) 947-5937



**Adams Creek R/C Speedway**, 5207 S. 194th E. Ave., Broken Arrow, OK 74014; John Beighle, (918) 355-1416



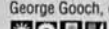
**Coweta Hobby & Speedway**, 310 S. Broadway, Coweta, OK 74429; Deriald Seabolt, (918) 486-3948



**Matt's Flying "M" R/C Raceway**, 111 W. 4th, Shamrock, OK 74068; Matt Sontag, (918) 352-3212



**Off-Road Car Assoc. of Tulsa**, 9720 Swan Dr., Broken Arrow, OK 74014; George Gooch, (918) 486-4528



**R.C.A.R.**, 12327 East 1st St., Tulsa, OK 74128; Dave Cole, 663-8998



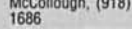
**RCRC**, 400 S. Vermont, Suite 104, Oklahoma City, OK 73108; Rick or Steve, (405) 947-7223



**Sundown Raceway**, 526 Virginia Ave., Ponca City, OK 74601; Ryan Trant, (405) 765-2832



**Wild Country Speedway**, 127 South Main, Porter, OK 74454; Charles McCollough, (918) 685-0372 or 687-1686



## OREGON

**Catch Some Air**, 44855 SE Wildcat Mountain Dr., Sandy, OR 97055; Erik, (503) 668-8334



**Cathie's R.C. World**, 443 So. Calapoolia, Sutherlin, OR 97479; Wes/Cathie Buzzard, (503) 459-2746



**Competition Racing Assoc.**, 17941 NE Glisan, Portland, OR 97230; Mark Taylor, (503) 257-0796



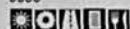


## PENNSYLVANIA

**A-1 R/C Speedway**, 15 S. Hanover St., Hummelstown, PA 17036; Clyde Felker, (717) 566-3335



**Ansolan**, 54 High St., Fairchance, PA 15656; Timothy Abraham, (412) 564-9956



**B&B Raceway**, 252 Geiger Rd., Philadelphia, PA 19115; Rod Smith, Doug or Dave Bruestle, (215) 686-6086



**BJ's Hobbies & Raceway**, 570 E. Camping Area Rd., Wellsboro, PA 17365; Janet & Allen Wiley, (717) 292-3723; fax, (717) 292-3584



**Brian's Raceway**, 733 Flexer Ave., Allentown, PA 18103; (215) 435-1862



**CEB Motors R/C Div.**, 5743 Molly Pitcher Hwy., Marion, PA 17235; Charlie Booze, (717) 375-4635



**Clearfield R/C Car Club**, P.O. Box 297, Clark Hill Rd., Hyde, PA 16843; Joe Welch, (814) 765-3045



**Clearfield R/C Raceway**, 4 Capricorn Ct., Clearfield, PA 16830; Shawn Richards, (814) 765-5608



**Cressona Mall Speedway**, Rt. 61, Pottsville, PA 17901; (717) 385-3506



**Curly's Hobby Shop**, 4455 W. Ridge Rd., Hickory Plaza, Erie, PA 16506; (814) 835-1134



**DARCAR**, RD 1, Box 290, DuBois, PA 15801; (814) 375-0687



**DC Ultra Oval**, 13 York Rd., Warminster, PA 18974, (215) 672-5200



**Denwick R/C Hobbies & Raceway**, 5601 Lincoln Way East, Fayetteville, PA 17222; Charles Gardenhour, (717) 352-8899



**Dreamboat Hobbies**, 2810 Pennsylvania Ave., Warren, PA 16365; Louie Dussia, (814) 723-8052



**East St. Raceway & Art Center**, 747 E. Railroad Ave., Verona, PA 15147; (412) 826-0602



**East St. Raceway**, 736 East Railroad Ave., Pittsburgh, PA 15147; Steve Maiolo, (412) 826-1324, (412) 826-0602



**Henning Scale Models R/C Raceway**, 128 S. Line St., Lansdale, PA 19446; Bill Henning, (215) 362-2442



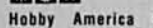
**High Tek Hobbies**, 13250 Rt. 30, N. Huntingdon, PA 15642; Ken Brooks, (412) 864-5278



**Hipkins Hobbies Raceway**, 402 W. Avondale-New London, West Grove, PA 19390; Doug Hipkins, (215) 869-8585



**Hobby America Raceway**, 5 Fitzsimmons St., Duke Center, PA 16729; Dan or Mike Coast, (814) 966-3765



**Hobby Heaven**, 1845 Rt. 422 West, Indiana, PA 15701; Scott McAdoo, (412) 463-8010



**Hobby House Raceway**, Downingtown Marketplace, Downingtown, PA 19335; J.T. Nelson, (215) 269-1300



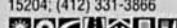
**Hobby World Raceway**, 172 Shillington Rd., Sinking Spring, PA 19608; Mike Wentzel, (215) 678-8760



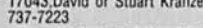
**JR Hobby Shop & Raceway**, 1806 Nagle Rd., Erie, PA 16501; Ron Bradea, (814) 898-1816



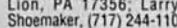
**Koontz's Home & Hobby Center**, 1205 Hoover St., Pittsburgh, PA 15204; (412) 331-3866



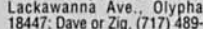
**Kranzel's R/C Raceway & Hobbies**, 415-B Bosler Ave., Lemoyne, PA 17043; David or Stuart Kranzel, (717) 737-7223



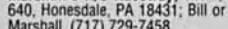
**L&R R/C Racing**, 15 S. Main St., Red Lion, PA 17356; Larry & Randy Shoemaker, (717) 244-1108



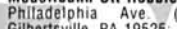
**Main Hobby Race Center**, 501 E. Lackawanna Ave., Olyphant, PA 18447; Dave or Zig, (717) 489-4566



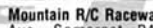
**Marshall's R/C Raceway**, RR 4, Box 640, Honesdale, PA 18431; Bill or Dot Marshall, (717) 729-7458



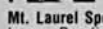
**Modellbahn Ott Hobbies**, 1145 E. Philadelphia Ave. (Rt. 73), Gilbertsville, PA 19525; (215) 367-5925



**Mountain R/C Raceway**, 918 S. Park Ave., Somerset, PA 15501; Bob Rhodes, (814) 445-4085



**Mt. Laurel Speedway**, 835-8 Hiester Lane, Reading, PA 19605; Joe Vaccaro, (215) 921-0176



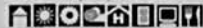
**New Garden Farms/The Mushroom Bowl**, 812 W. Cypress St., Kennett Square, PA 19348; Joe, Bruce, or Drew, (610) 444-1850



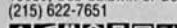
**Pit Stop Hobbies**, 262 W. Main St., Mount Joy, PA 17552; James F. Stovot Jr., (717) 653-6222



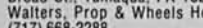
**Pro Challenge Raceways**, Wycombe Ave. (P.O. Box 536), Lansdowne, PA 19050; Bob Baldwin or Bob Paulauge, (215) 622-7651



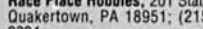
**Prop & Wheels Raceway**, 139 W. Broad St., Tamaqua, PA 18252; Gil Walters, Prop & Wheels Hobbies, (717) 668-2288



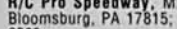
**Race Place Hobbies**, 201 Station Rd., Quakertown, PA 18951; (215) 538-2394



**R/C Pro Speedway**, Milville Rd., Bloomsburg, PA 17815; (717) 387-0266



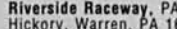
**RCO Raceway**, 519 Broadway, Hanover, PA 17331; Chris Shaffer, (717) 633-9490



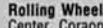
**Riverside Raceway**, PA Ave. W & Hickory, Warren, PA 16365; Jeff, (814) 723-4211



**Rolling Wheels**, West Hills Shopping Center, Coraopolis, PA 15108; Peggy, (412) 262-4858



**South Mountain R/C Speedway**, 357 Furnace Rd., Wernersville, PA 19565; George Merkel, (215) 267-4736



**Staub Bros. R/C Speedway**, 31 Locust St., Gettysburg, PA 17325; Todd or Scott Staub, (717) 334-5445



**Stenko's Superspeedway**, 1156 6th Ave., Berwick, PA 18603; Larry Dellegrotto, (717) 759-6363



**T&T Radio Controlled Racing**, Randolph Rd., Great Bend, PA 18821; Jack, (607) 773-8603



**TC's R/C's**, 1537 Freeport Rd., Natrona Heights, PA 15065; Tom Coriale, (412) 226-8802



**Trains and Lanes**, 3812 Newburg Rd., Easton, PA 18042; Jeff Setzer, (215) 253-8850



**Wagonhill Hobbies**, 967 New Castle Rd., Rt. 422, Butler, PA 16001; Jeff Hyatt, (412) 865-9877

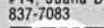


## PUERTO RICO

**Cachon Off-Road Track**, Box 952, Barranquitas, PR 00794; (809) 857-0341



**Hacienda Muñoz R/C Track**, Carr. #14, Juana Diaz, PR 00795; (809) 837-7083

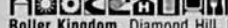


## RHODE ISLAND

**East Bay Hobbies**, 629 Metacom Ave., Bristol, RI 02809; (401) 254-0778



**R/C Hobbies**, 47 Sandybottom Rd., Coventry, RI 02816; (401) 823-4335



**Roller Kingdom**, Diamond Hill, Rte. 114, Woonsocket, RI 02895; (508) 520-3262

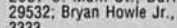


**Tri-State R/C Raceway**, 205 Hallene Rd., Warwick, RI 02886; Raymond Dean, (401) 738-4908

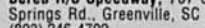


## SOUTH CAROLINA

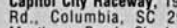
**Bandit's Performance R/C Hobbies**, 2037 S. Main St., Darlington, SC 29532; Bryan Howle Jr., (803) 393-3333



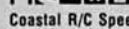
**Berea R/C Speedway**, 707 Sulphur Springs Rd., Greenville, SC 29611; (803) 246-4702



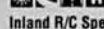
**Capitol City Raceway**, 1955 Legrand Rd., Columbia, SC 29223; Lee Mouton or Brooks Shealy, (803) 788-7749 or 788-4669



**Coastal R/C Speedway**, 8553 Hwy. 544, Myrtle Beach, SC 29577; Wendel Smith, (803) 236-9309



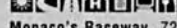
**Inland R/C Speedway**, 61 Newfound Lane, Myrtle Beach, SC 29577; James Watten, (803) 293-1753



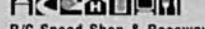
**Mid-Carolina R/C Superspeedway**, 2222 Wintercrest Dr., Rock Hill, SC 29732; Fred Penland, (803) 328-8278



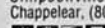
**Monaco's Raceway**, 727 E. Buena Vista Ave., N. Augusta, SC 29841; Bill Courson, (803) 279-8982



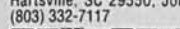
**R/C Speed Shop & Raceway**, 2122 Platt Springs Rd., W. Columbia, SC 29169; Eric Prevost, (803) 791-4715



**Simpsonville International R/C Speedway**, 3009 Bethel Rd., Simpsonville, SC 29681; Larry Chappelle, (803) 297-3572

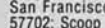


**TBS Superspeedway**, 800 Hwy. 15N, Hartsville, SC 29550; Johnny Tiller, (803) 332-7117

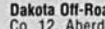


## SOUTH DAKOTA

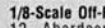
**CSF Speedway**, Central States Fairgrounds, Creative Arts Bldg., 800 San Francisco St., Rapid City, SD 57702; Scoop Laskowski, (605) 342-5292



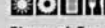
**Dakota Off-Road Racers**, 2989 W. Br. Co. 12, Aberdeen, SD 57401; (605) 226-0604



**1/8-Scale Off-Road**, 2989 W. Br. Co. 12, Aberdeen, SD 57401; Brian Bourdon, (605) 225-0803 (evening), 226-0604 (day)

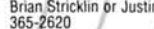


**Flags of Fun R/C Raceway**, 2802 Eglint St., Rapid City, SD 57702; Rex Conrad or Scoop Caskowski, (605) 341-2186

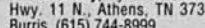


## TENNESSEE

**Action Hobby Shop**, 3723 S. Mendenhall, Memphis, TN 38115; Brian Stricklin or Justin Austen, (901) 365-2620



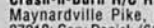
**AIR Raceway**, ByPass Hobbies, 1114 Hwy. 11 N., Athens, TN 37033; Bill Burris, (615) 744-8999



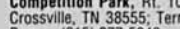
**Butturi's Best Raceway**, 4828 George Williams, Knoxville, TN 37922; Steve Butturi, (615) 531-0325



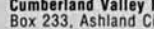
**Crash-n-Burn R/C Raceway**, 7030 Maynardville Pike, Knoxville, TN 37918; Gary Daniel, (615) 922-8722



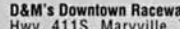
**Competition Park**, Rt. 10, Box 268, Crossville, TN 38555; Terry or Yvette Bowen, (615) 277-5048



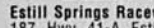
**Cumberland Valley Raceway**, P.O. Box 233, Ashland City, TN 30715; Jamie Pate, (615) 792-4371, ext. 1195



**D&M's Downtown Raceway**, 2703 US Hwy. 411S, Maryville, TN 37033; (615) 681-8919



**Estill Springs Raceway**, P.O. Box 187, Hwy. 41-A, Estill Springs, TN 37330; David or Wendy Panter, (615) 649-5113



**Hobby World Raceway**, 185 S. Jefferson, Cookeville, TN 38501; Scott Large or Scott Watson, (615) 528-2808



**Lail Speedway**, 812 Wells Rd., Maryville, TN 37801; Jack or Chris, (615) 983-9207



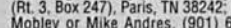
**Machine-Head Strails**, 938 Grandmere Rd., Lawrenceburg, TN 38464; Larry and Eliane Sanders, (615) 762-6630



**Mad Dog Motorsports**, 707 Joy St. (Rt. 3, Box 247), Paris, TN 38242; Dan Mobley or Mike Andres, (901) 642-7794 or 644-1523



**MSA R/C Racing**, Rt. 12 Box 489 B, Crossville, TN 38555; D.R. Findley, (615) 456-0027



**Panther Traxx**, 7030 Maynardville Hwy., Knoxville, TN 37918; Gary Daniel, (615) 922-8722



**Raceplace**, 215 Lynn Garden Dr., Kingsport, TN 37660; Randy Horton, (615) 378-3330



**Rivergate Hobby Center**, 700A Two Mile Pkwy., Goodlettsville, TN 37072; David Hitt, (615) 859-3455



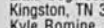
**RMD Raceway**, 175 Seavers Rd., Jackson TN 38301; Travis Robertson, (901) 424-0283



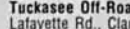
**TNT Pro Hobbies**, 5529 Pleasant View #2, Memphis, TN 38134; Tony Howell, (901) 377-0013



**Tri-County Radio Control Club**, 919 Little Dogwood, 1312 Kingston Hwy., Kingston, TN 37763; Dwaine Romine, Kyle Romine, (615) 376-2330, 376-9955



**Tuckasee Off-Road Raceway**, 1004 Lafayette Rd., Clarksville, TN 37042; Denney Hayward, (615) 645-2635



## TEXAS

**AA Raceway**, 1617 Toomey Rd., Austin, TX 78704; (512) 474-8277



**Anchored Acres Raceway**, 1101 Sheppard Rd., Burkburnett, TX 76354; Bob & Patricia Veal, (817) 569-4707



**Austin R/C Center**, 9702 Gray Blvd., Austin, TX 78758; Caton Cobb, (512) 832-8144



**B&C Speedway**, 201 Enterprise Row, #101, Conroe, TX 77301; Bobby Hillin, (409) 760-1986



**Dove R/C Speedway**, 400 South I-35, Bruceville, TX 76663; Curtis A. Rowe, (817) 757-1150



**Eastex Raceway**, 45000 Hwy. 59 N., New Caney, TX 77357; Heinz Falke, (713) 399-1527



**Hal's R/C Raceway**, 1440 Bessemer, El Paso, TX 79936; (915) 591-2213



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# Track Directory

**Rivercity Speedway**, 11731 Wetmore, San Antonio, TX 78247; Ralph Hernandez, (210) 359-6870; Joe Toledo, (210) 341-5552

**Ron's R/C Hobbies & Raceway**, 2551 Lombardy, Dallas, TX 75220; Ron Salsini, (214) 357-3453

**Southside R/C Raceway**, 4409 FM2351, Friendswood, TX 77546; Roy Baxter, (713) 992-3541

**Spring Creek R/C**, 45 Fisherman's Rd., San Angelo, TX 76904; (915) 944-3850

**Star/Car Raceway**, 5802 Patton St., Corpus Christi, TX 78415; Mike Heilums, (512) 289-0066; Race Hotline, (512) 881-6105.

**Star R/C Hobbies**, 803 Garcia St., Port Isabel, So. Padre Island, TX 78578; Fred Carr, (512) 943-7546

**T&T Eagle**, 161 W. Spring Creek Pkwy., #601, Wichita Falls, TX 76023; Tony Welborn, (214) 517-0562

**Texas State Raceway**, 3703 Seymour Rd., Wichita Falls, TX 76039; Chip Warman, (817) 692-2065

**TK's R/C Park**, 2921 Old Claude Hwy., Amarillo, TX 79101; (806) 622-0017

**Wes Hobby**, 980 S. 4th St., Beaumont, TX 77701; Edmond Richards, (409) 839-4929

**Wild Bill's**, 535 E. Shady Grove, Irving, TX 75060; Lynn Morgan or Jerry Williams, (214) 438-9224

## UTAH

**Hansen Intermountain R/C Raceway**, 8481 W. 2700 S., Magna, UT 84044; Kevin Hansen, (801) 250-8303

**JD's Intermountain R/C Raceway**, 1500 E. 1748 S., Vernal, UT 84078; John or Dora Frankovich, (801) 789-3930 or 789-8337

**Power Hobbies & Raceway**, 135 No. 900 East Suite 7, St. George, UT 84770; April Nutley, (801) 628-8747

**Vision Hobby Raceway**, 3528 N. State St., Orem, UT 84057; Vision Hobby, (801) 226-6226

## VERMONT

**Barre Town R/C Club**, Wall St. Complex, S. Main St., Rt. 14, Barre, VT 05641; Daniel Guyette Sr., (802) 229-0639

**Hard Rock Raceway**, Astrachan Dr., Bennington, VT 05201; Darren Ricchi, (802) 447-2656

**Mike's Hobbies & Raceway**, 162 N. Main St., Rutland, VT 05701; Stephen Rachis, (802) 775-0059

**Riverside R/C Speedway**, Boyz R/C Hobbies, 700 Elm St., Winoski, VT 05404; Charles Barsalow, (802) 893-2660 or 893-2332

## VIRGINIA

**A-1 Raceways**, 940 Radford Rd., Christiansburg, VA 24073; Kay or Charles Franks, (705) 381-9731 or 382-1173

**Bob's Hobbies & Raceway**, 910-J Brandy Creek Dr., Mechanicsville, VA 23111; Bob Wagner, (804) 746-2758

**Cooper's R/C Raceway**, Rt. 4, Box 1228, Chatham, VA 24531; (804) 724-4182

**Craftech Challenge**, Naval Base D-4, Piesey St., Norfolk, VA 23455; Bernie Duffy, (804) 444-3846

**Crossroads Hobbies R/C Raceway**, 1104 W. Main St., Salem, VA 24153; Ronnie Black, (703) 387-3414

**Fairystone R/C Speedway**, Rt. 4, Box 918, SR635, Stuart, VA 24171; Pat Moon Jr., (703) 930-3984

**Front Royal R/C Racing Association**, P.O. Box 1252, Front Royal, VA 22630; Pete Pomeroy, (703) 636-6149

**H&S R/C Raceway**, 565 Electric Rd., Salem, VA 24153; Henry Dowd or Stacy LaPrade, (703) 343-4012

**Hobby Hangar Speedway**, 4433A Brookfield Corp. Dr., Chantilly, VA 22021; Kwang Ko, (703) 631-8820

**Hobby Shack and Track**, Route 2, Box 184, St. Stephens CH, VA 23148; John or Laura Holder, (804) 769-1311

**KC's Radio Control & Repair**, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596

**Lane's End Raceway**, P.O. Box 153, Bridgewater, VA 22812; Tony Strother, (703) 828-6655 or 3471

**Mid Atlantic Raceway**, 89 E. Elizabeth St., Harrisburg, VA 22801; (703) 433-3952

**NSWC MWR R/C Track**, C1243C Dahlgren, VA 22448; Doris Copen, (703) 663-1730

**SHAMROC**, P.O. Box 3739; Winchester, VA 22604; Glenn Bland, (703) 888-3927

**Sterling Truck & Auto Racers**, 20921 Davenport Dr., Sterling, VA 22170; Ron Beckman, (703) 444-0333

**The Tillyard**, Rt. 1, Box 235A, Dayton, VA 22801; Homer W. Allman Jr., (703) 828-3476 or 828-6655

**Timberlake Hobbies**, 1400 Atlantic Ave., #201, Virginia Beach, VA 23451; Doris Cruza, (804) 491-8016

**Trackside Hobbies**, 1314 E. Pembroke Ave., Hampton, VA 23663; Rick Gardwell, (804) 723-4170

**Trainland R/C Club**, 5661 Shoulders Hill Rd., Suffolk, VA 23435; Frank Stevens, (804) 483-2331

**Winners Circle**, 3236 W. Clay St., Richmond, VA 23230; (804) 355-7076

## WASHINGTON

**Alfie's**, 108 South K St., Aberdeen, WA 98520; (206) 533-6638

**Arlington Heights Speedway**, 13629 228th St. NE, Arlington, WA 98223; Shawn Bussert, (206) 435-3442

**Firegrove TNT Raceway**, 10611 136th E., Puyallup, WA 98374; Walt Hale, (206) 845-7675

**Four Season R/C Racing**, 2941 Sleater Kinney Rd. NE, Olympia, WA 98506; Gary & Sharon Brown, (206) 491-2430

**Hank Perry Race Complex**, Sullivan Rd., WA 98213; (509) 927-1879

**L&L R/C Raceway**, 15818 SE, 287th, Kent, WA 98042; Eric Lake or Bob Lewis, (206) 639-1241 or 631-1664

**NORA Performance R/C**, P.O. Box 955 (1673 Cedarvale Rd.), Mt. Vernon, WA 98273; (206) 755-9464

**Raceway Hobbies**, 188 Sunset Ave. S., Edmonds, WA 98020; Dave or Ron Steen, (206) 774-3285

**Schmidt's Auto Parts**, 10305 Old Hwy. 99, Marysville, WA 98271; Jon Failia, (206) 653-8838

**Spokane Indoor Raceway**, E. 6422 2nd Ave., Spokane, WA 99212; Mike Gjendem, (509) 534-RACE

**Tacoma R/C Raceway Hobbies**, 6305 6th Ave., Tacoma, WA 98406; Neil Bade, (206) 565-1935

**Tearor Raceway**, 8012 S. Tacoma Way, Tacoma, WA 98499; Dave Kleinman, (206) 584-8659

## WEST VIRGINIA

**Burr-Fab Raceway**, 90 Davis St., West Union, WV 26456; Mark Travis, (304) 873-2487

**D.W. Reed's**, 142 West Main, Bridgeport, WV 26330; David Reed, (304) 842-2742

**Fulton's R/C Raceway**, 2646 Chapline St., Wheeling, WV 26003; James Fulton, (304) 233-5355

**R/C Race Place**, Rt. 10, Box 351, Morgantown, WV 26505; (304) 292-0811

**R/C Speed**, Rt. 1, Box 363, Ronceverte, WV 24970; Joe, (304) 647-4162

## WISCONSIN

**ABC R/C**, 1441 B East Main St., Waukesha, WI 53186; Dick, (414) 542-1245

**Antigo Hobby**, 311 Superior St., Suite 7, Antigo, WI 54409; (715) 623-7655

**Arena Park Raceway**, Kenosha County Parks, 7727 60th Ave., Kenosha, WI 53142; David Delabiq, (414) 657-6371

**Sparta R/C Raceway**, Golf Course Rd., Sparta, WI 54656; Eric Johnson, (608) 269-5861 or 269-6613

**Fox Valley Off-Road Racing Club**, R1, Mayflower Rd., Hortonville, WI 54944; (414) 739-9211

**Frog's R/C Raceway**, Rt. 1, Phillips, WI 54555; (715) 339-2314 or 339-2958

**Gary's Hobby Center**, 3701 Durand Ave., Racine, WI 53403; Ron, (414) 554-8884 or 1-800-894-6229

**Grant County Speedway**, 2125 Oak, Hazel Green, WI 53811; Brad Birkette, (608) 854-2246

**Hobby Headquarters**, 224 North Franklin St., Port Washington, WI 53074; Jesse or Jenny, (414) 284-8850

**Hobbytown Speedway**, 4231 8th St. S., Wisconsin Rapids, WI 54494; (715) 421-1222

**JJ's Dirt Heaven**, 6028 County K, Champion, WI 54229; (414) 866-9096

**Maniac Motors Raceway**, 244 Rt. 1 A1 Rt. H, Kendall, WI 54638; (608) 462-8935

**MARCCA Raceways**, 1810 S. Park St., Madison, WI 53713; Jeff Gundlach, (608) 273-0519

**Midwest Tri-Clone**, 144 N. Main St., West Bend, WI 53095; (414) 334-0487

**Mitch's Finish Line R/C Inc.**, 786 Morris Ave., Green Bay, WI 54304; (414) 497-0507

**Muskyland R/C Raceway**, Rt. 10, Box 269, Hayward, WI 54843; Jim Ahrens, (715) 634-2109

**Neenah R/C Speedway**, High Cliff Supper Club, W5095 Golf Course Rd., Menasha, WI 54952; Martin Paulik, (414) 231-0039

**Pacific R/C Club**, W7990 Hwy. P, Pardsville, WI 53954; Rhys Brenner, (608) 742-7100

**R/C Hobby Off-Road Track**, Lewison Lane, Viroqua, WI 54665; Dan and Diane Sawvell, (608) 637-8221

**R/C Raceway**, 2239 Cty. Rd. E., Baldwin, WI 54002; Lance Van Damme, (715) 684-2690

**Radio Mania**, 129 Harrison St., North Prairie, WI 53153; Bill Bowes, (414) 392-9515

**Richland Center R/C Off-Road Racing Club**, Fairground Rd., Richland Center, WI 53581; Rick & Cheryl Stussy, (608) 647-7313

**S.C.A.R.C.E. Raceways**, 1303 W. Wisconsin St., Portage, WI 53901; Cory Catlin, (608) 742-3799

**S&N's Trackside Hobbies and Raceway**, 6045 N. Green Bay Ave., Glendale, WI 53209; Scott and Nancy Ernst, (414) 351-1910

**Sparta R/C Raceway**, Golf Course Rd., Sparta, WI 54656; Eric Johnson, (608) 269-5861 or 269-6613

**Stoltz Raceways**, 548 Summit Dr., West Bend, WI 53095; (414) 338-6097

**West Bend Hobbies**, 144 N. Main St., West Bend, WI 53040; (414) 334-0487

## WYOMING

**Collectable Creations Off-Road Oval Track**, 1790 Dell Range Blvd., Cheyenne, WY 82009; Phil Severson, (307) 632-2156

## AUSTRALIA

**Wodonga R/C Car Club**, 11 Murphy St., Wodonga, VIC 3690; Ron Langman, 011-6160-247-128

**Aubry R/C Car Club**, Aubry Showgrounds, Aubry, NSW 2640; Ron Langman, 060-247-128

## BELGIUM

**Cartroubles Indoor Buggy Track**, Jan Moonsstraat 52-56, 2160 Wommelgem, Belgium; Guy Ermes, 32-3-326-51-15; fax, 32-3-326-51-01

**Model Racing Club Oudenaarde**, Scheldekan, 9700 Oudenaarde, Belgium; A. Chanterie, 32-55-31-36-48; fax, 32-55-30-19-12

## BRAZIL

**Brasilia R/C Motor Circuit**, Estacionamento do Estadio Mane Guarrincha, Brasilia, DF 70000, Brazil; Alexandre (Alex), 55-061-273-7205

**Hobby Center**, SQS 210 BLH Apt. 204, Brasilia, DF-Brasil 7073; 061-242-0488

**Off Roaders**, Av. Guillermo Dummont Villars, 317, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931

**Way of R/C Off-Road Cerrado**, Rua Paraiba 1323, 1st floor, Belo Horizonte, Minas Gerais; Claudio T. Correia, (031) 227-6111, fax (031) 227-6869

## CANADA

**Action Wheelz**, 462 Turcotte, Vanier, Quebec, G1M 1R6; Regent Tardif, (418) 527-5756

**Andy's R/C Raceway**, Box 423, Lac La Biche, AB T0A 2C0; Andy Bryks, (403) 623-2951

**Aprilia Track**, 20 Parsons Ridge, Kanata, Ontario K2L 2N4; (613) 836-2577

**ATN**, 2000 Paul Hubert, Nicolet, Quebec J0G 1E0; Louis Durand, (819) 293-6097

**Cactus Speedway**, Con. #3 Ruthven at Colastanti's, Ruthven, Ontario N8N 2W6; Lanny Fitzpatrick, (519) 735-3039; Wayne Telasco, (519) 966-0702

**Circuit Pepsi**, Centre de Location, 37 duRoi, Sorel, Quebec; (514) 746-8828



**Circuit R/C Bonzai**, 164 Cowie, Granby, Quebec J2G 3V3; (514) 372-3622



**Circuit Teleguide Ville Mercier**, 1101 St. Jean Baptiste, Mercier, Quebec J6R 1C6; Norm Foster, (514) 699-4003



**Club AVATT**, 244, rue Hotel de Ville, Deauville, Quebec; Daniel Vanier, (819) 864-6262



**Crash Course**, Box 9, Site 8, RR #1, Spruce Grove, Alberta T7X 2T4; Tim Starrevie (403) 963-5795



**CRCCC**, Box 309, Clinton, Ontario NOM 1L0; Eric Russell (519) 482-9429



**Dynamic Hobbies**, 21 Concourse Gate, Unit 6, Nepean, Ontario K2E 7S4; Clark Freeman, (613) 225-9634



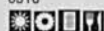
**East Coast Model Center Raceway**, 13 Glen Stewart Dr., Suite 1, Southport, Prince Edward Island, C1A 8X9; Gary Stephen, (902) 569-3262



**Fast-Trax Speedway**, RR 4, Trenton, Ontario; Russ McPeak, (613) 394-6411



**The Glass Castle Off-Road**, RR#7 Trans Canada Hwy., Duncan, B.C. V9L 6P4; Don Douthwright, (604) 746-6518



**GRSCR**, 9 Gauthier, St-de L'Achigan, Quebec J0K 3H0; (514) 588-4254



**Hobbypro Raceways Ltd.**, 16020-132 Ave., Edmonton, Alberta T5V 1M1; Tony or Ian, (403) 455-RACE (7223)



**Honda House Motor Speedway**, 384 Richmond St., Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530



**Interior R/C Raceway**, 34-1605 Summit Dr., Kamloops, BC, V2E 2A5; Martin Vannieuwenhuizen, (604) 374-1268, (604) 374-8458



**IROCC Off-Road**, Hartland Rd., Victoria, B.C., Gary Allen, (604) 478-8004



**J-T International Raceway**, 127 Milligan Lane, Napanee, Ontario K7R 8A1; N. O'Neill, (613) 354-0099



**Krazy Trak**, 2412 Miller Ave., Saskatoon, Sask.; Brian & Bart Kendel, (306) 221-7344



**M&M Hobbies Raceway**, 430 McMurphy Ave. S., Unit 1604, Brampton, Ontario L6Y2N4; Mike, (416) 452-8355



**Maple Grove R/C Track**, RR #3, Brockville, Ontario K6V 5T3; Ray Giroux, (613) 342-5549



**Meaford Georgian Bay Raceway**, Hwy. 26, West of Meaford, Meaford, Ontario N0H 1Y0; Greg Allan or Dave Shaw, (519) 538-1441



**MORRAC Raceway**, 6449 Crowchild Tr. SW., Box 36060, Calgary, Alberta T3E 7C8; Gary Fliegel, (403) 254-1386



**Niagra R/C Speedway**, 1874 Hwy. 20, Thorold, Ontario; Steve Ingram, (416) 892-5548



**Prince George Radio Controlled Car Club**, 202 Explorer Cres., Prince George, B.C. Y2M5R8; Doug Waller, (604) 561-0035



**Quintrax Speedway**, Box 1034, Belleville, Ontario K8N 5B6; (613) 962-1414; fax: (613) 962-7306



**Radical Raceway**, 150 Bradwick Drive, Unit 25, Concord, Ontario L4K 1K8; Roland Glass, (416) 660-5238



**Rousillon Hobby Track**, 177-D St-Jean Baptiste, Chateaufort, Quebec J6K 3B4; (514) 698-2151



**RROL**, Flite Craft Hobbies, 509 McGregor St., London, Ontario; Greg, (519) 642-7468 or Mark Hennion, (519) 474-2507



**Seaway Valley R/C Raceway**, RR 1, Iroquois, Ontario K0E 1K0; Orville or Carol Smyth, (613) 652-4953



**Union Creek Speedway**, 281 Henderson Highway, Winnipeg, Manitoba R2L 1M4; MRCAR c/o Kelvin Community Centre, (204) 667-9186



**Universal R/C Speedway**, Niagara St., Welland, Ontario; (416) 735-5051



**Wayne's World**, 1616 Brock St. S., Whitby, Ontario L1N 4M4; Wayne, (905) 430-4795



**WORRC**, 861 Isack Dr., Windsor, Ontario N8S 3W6; Pete Adams, (519) 944-8519 or 974-3346



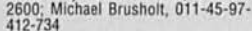
**COLOMBIA**

**Garoso Raceway**, Avenida Libertadores con Diagonal Gran Colombia, Cucuta, Colombia; Gabriel Rodriguez, 975-751892

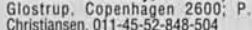


**DENMARK**

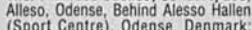
**Holstebro R/C Buggy Club**, Mozartsvej 7500 Holstebro, Denmark 2600; Michael Brusholt, 011-45-97-412-734



**Rainbow Raceway**, Eriksvej 9, Glostrup, Copenhagen 2600; P. Christiansen, 011-45-52-848-504



**Thor Minirace Odense**, Sohusevej 255, Allose, Odense, Behind Alesso Hallen (Sport Centre), Odense, Denmark; Ulrich Rasmussen, 011-45-65-303-707



**ENGLAND**

**Chessington Radio Car Club**, Surbiton Sport Club, Riverhill Estate, Worcester Park Rd., Worcester Park, Surrey, England; Ian Spiller, 0252-20657



**FRANCE**

**Auto Electron**, 35, rue B. de Ventadour, Limoges, France 87000; M. Boudou, 55 062763

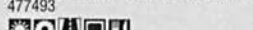


**F.A.B.**, rue Jean Baptiste Lebas, 62400 Bethune France; Lericque Gerard, 27-57-48-70

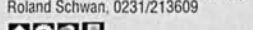


**GERMANY**

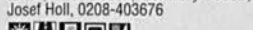
**MC Köln**, Bottgerstr., Worringen, Germany 50769; Ralf Habel, 02733-477493



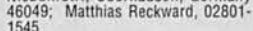
**Mini Car Club Dortmund**, Kortschstr. 4, 4600 Dortmund 13, Germany; Roland Schwan, 0231/213609



**Oberhausen-Altdaten**, Am Fserderturm, Oberhausen, Germany 46099; Josef Holl, 0208-403676

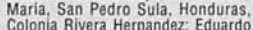


**Stoppelhopper Oberhausen**, Niebuhrstr., Oberhausen, Germany 46049; Matthias Reckward, 02801-1545



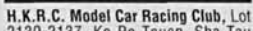
**HONDURAS**

**Autodromo Accion**, Quinta Santa Maria, San Pedro Sula, Honduras, Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-2061



**HONG KONG**

**H.K.R.C. Model Car Racing Club**, Lot 2130-2137, Ko Po Tsuen, Sha Tau Kok Rd., N.T., Hong Kong; Alex Chan, (852) 659-2822



**Kingsville Buggy Arena**, Wong Chuk Yeung Village, Shatin, N.T.; Pak Yeung, (852) 607-0828



**INDONESIA**

**Beverly's Racing**, Palm St., 188, Surabaya, Jatim, Indonesia; Jhon Mudik, 011-62-31-595-888



**ISRAEL**

**Nahshoneat**, Abba Nile Silver Str. 64, Haifa, Israel 32809; Golan Levy, (972) 039386444 or (972) 04231252



**ITALY**

**Associazione Modellisti Cossato**, via P. Maffei, Cossato 13014, Biella, Italy; Zanellato Romildo, 015-405881, fax 015-922709



**JAPAN**

**Courtney Off-Road**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 011-81-61173-53674



**Foster R/C Raceway**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; Camp Foster Arts & Crafts, 011-81-61173-53674



**Hansen Off-Road**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 011-81-61173-53674



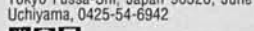
**Iwakuni R/C Track**, PSC 561, Box 978, FPO AP 96310-0978; David T. Eck, 011-81-6117-53-3662



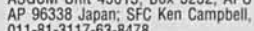
**Misawa R/C Raceway**, 13th Fighter Squadron, PSC 76, Box 2585, APO AP 96139-2585; 011-81-176-53-5181, ext. 226-6506



**Yokata R/C Racers**, Yokata Air Base, Tokyo Fussa-Shi, Japan 96326; June Uchiyama, 0425-54-6942

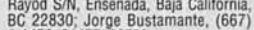


**Zama Off-Road Raceway**, 17th ASGCM Unit 45013, Box 3232, APO AP 96338 Japan; SFC Ken Campbell, 011-81-3117-63-8478



**MEXICO**

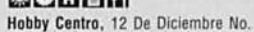
**Alces Off Road**, Lopez Mateos y Rayod S/N, Ensenada, Baja California, BC 22830; Jorge Bustamante, (667) 6-1476, 61477, 86729



**Baja Jr.**, H. Valdez 151 Pte. Y Gmo. Prieto, Los Mochis Sinaloa 81200; Memo Asencio, Gaby Macias, 681-20276; fax, 681-26430



**Hobby Centro**, 12 De Diciembre No. 3070-A, Guadalupe, Jalisco 45550; Alejandro Ortiz Del Toro, (36) 21-46-28



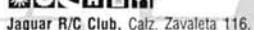
**Hobby's Formula**, Au observatorio 457 DF 01120; (905) 502-3620



**Hobby Model's Raceway**, Blvd. Garcia de Leon, 1555, Morelia, Michoacan 58260; (431) 5-01-22



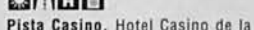
**Jaguar R/C Club**, Calz. Zavaleta 116, Puebla 72150; Chema, Denise or Chiro, (22) 31-00-91, (22) 33-00-94



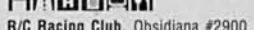
**La Hielera**, Prol Corregidora Nte 350, Queretaro, QRO C.P. 76160; Jorge Morelos Rabell, (42) 12-15-25



**Pista Casino**, Hotel Casino de la Selva, Cuernavaca, Morelos 16507; Luis Duhart, (73) 19-12-38



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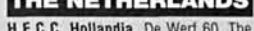


**Tony's Track**, Obregon 364 Sur, Culicán Sinaloa; Guillermo Prieto, (67) 165708-168141



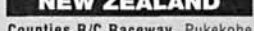
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**H.F.C.C. Hollandia**, De Werf 60, The Hague, The Netherlands; G. de Jong, 031-070-3679820



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**Papakura Indoor R/C Car Club**, 25 Tainere Cres., Papakura, Auckland; Colin Perry, (09) 298-4711



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**Boyer R/C Hobby Shop**, Unit No. 10 Lucas Commercial Center, Marcos Hiway, Mayamot, Antipolo, Rizal; Jose "Boy" Chua, 721-2555

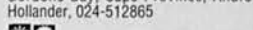


**Philippine R/C Association**, B.F. Homes Paranaque, Metro Manila 1700; Ronald/Manny Villafior, 23-30-08



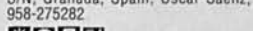
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**Gordons Bay R/C Club (GBRC)**, Andrew Norman Sports Centre, Gordons Bay, Cape Province; Andre Hollander, 024-512865

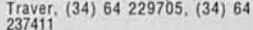


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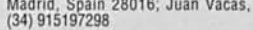
**Club Social Sevillana**, Crta. Pulanias S/N, Granada, Spain; Oscar Saenz, 958-275282



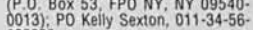
**Motoclub Castellon R.C.**, Rafalafena, S/N, 12004 Castellon, Spain; Octavio Traver, (34) 64 229705, (34) 64 237411



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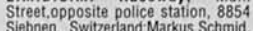


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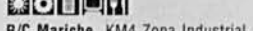


**VENEZUELA**

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